Antea USA, Inc.
4006 148th Avenue NE
Redmond, Washington 98052 USA
www.anteagroup.com

February 8, 2012

Ms. Maura O'Brien
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, Washington 98008-5452

Sent via FedEx Saver

Subject: Olympic Pipeline Cathodic Protection Work – E Yard
Kinder Morgan Harbor Island Terminal
Seattle, Washington
Antea Group Project No. KMHI-001C
KMLT File No. 29.79.02 (81171)

Dear Ms. O'Brien,

On behalf of Kinder Morgan Liquids Terminals LLC (KMLT), Antea™Group is pleased to submit this report to present a summary of soil excavation, soil and groundwater sampling and analysis, and soil and groundwater disposal associated with facility upgrades that were performed by Olympic Pipeline Company (OPLC) in the E Yard at the KMLT Harbor Island Terminal located at 2720 13th Avenue Southwest in Seattle, Washington (Figure 1). This report is provided to comply with requirements in Exhibit D Restrictive Covenant of the Consent Decree, dated October 29, 1999.

DESCRIPTION OF WORK

OPLC currently leases from KMLT a portion of the E Yard to operate equipment associated with the operation of their pipeline. In September 2011, OPLC performed facility upgrades to augment the existing cathodic protection system for an existing above-ground utility tank located in the eastern portion of their leasehold (Figure 2). Expansion of the system included the installation of two anode wells (Anode Well #1 and Anode Well #2) to approximately 50 feet below ground surface (Figure 3).

On September 12 through 14, 2011, OPLC performed mud rotary drilling to complete the soil borings for anode installation. During drilling, a black tarry material was observed in drill cuttings from Anode Well #1. The driller estimates that this material occurred at a depth of approximately 5.5 feet and was less than a foot in thickness. A sample of drill cuttings containing this material was collected and submitted for forensic analysis. The borings were completed and soil and water generated during drilling were placed in 55-gallon drums pending

transportation and disposal. OPLC characterized the waste as water containing soil/solids, and a total of 32 drums waste were generated.

SAMPLING, LABORATORY ANALYSIS, AND RESULTS

Waste Characterization

Soil and water samples were collected from drill cuttings and were submitted to Pace Analytical Services Inc. in Seattle, Washington for laboratory analysis.

The soil and water samples were analyzed for:

- Total Petroleum Hydrocarbons in the diesel range (TPH-D) using Washington Method NWTPH-Dx;
- Total Petroleum Hydrocarbons in the gasoline range (TPH-G) using Washington Method NWTPH-Gx;
- Benzene, toluene, ethylbenzene, and total xylenes using USEPA Method 8021B;
- TCLP Metals (arsenic, barium, cadmium, chromium, lead, selenium, and silver) using USEPA Method 6010;
- TCLP mercury using USEPA Method 7470; and
- RCRA TCLP Volatiles by 8260.

Additionally, the soil sample was analyzed for percent moisture using ASTM Method D2974-87.

Analytical results indicated that the waste generated during the drilling could be disposed of as a non-hazardous waste. Copies of the analytical laboratory reports are included in Attachment A.

Forensic Analysis

A soil sample was collected from drill cuttings containing the black tarry material that was observed from Anode Well #1 and were submitted to Friedman & Bruya in Seattle, Washington for forensic analysis. Capillary gas chromatography using a flame ionization detector was used to evaluate the sample. Results indicated that the material displayed characteristics of a high boiling point product such as diesel fuel 6, Bunker C, or similar materials. Furthermore, the results indicated that the fuel present has undergone substantial biological degradation. It can be concluded that this forensic evaluation indicates the material encountered is an aged material.

WASTE DISPOSAL

Based on analytical results, a total of 32 drums of water containing soils/solids were transported to Heritage Environmental Services in Coolidge, Arizona for disposal as non-hazardous waste on December 1, 2011. Copies of the disposal receipt are included in Attachment B.

All work associated with facility upgrades were completed on December 1, 2011.

Please call if you have any questions regarding the contents of this letter

Thank you,

Dawna Leong

Dawna Leong
Senior Engineer
ANTEA GROUP

Enclosures:

Table 1	Summary of Waste Disposal Soil Sample Analytical Results
Table 2	Summary of Wastewater Sample Analytical Results
Figure 1	Site Location Map
Figure 2	Site Map
Figure 3	E Yard Work by OPLC
Appendix A	Laboratory Analytical and Forensic Reports and Chain-of-Custody Documentation
Appendix B	Water Disposal Manifest

cc: Mr. Andrew Holbrook, KMLT, Portland, OR (CD copy)
Mr. Robert Truedinger, c/o Stephanie Randall, KMLT, Orange, CA (CD copy)
Ms. Stephanie Randall, KMLT, Orange, CA (File copy)
File Copy, Antea Group

Tables

Table 1
Summary of Waste Disposal Soil Sample Analytical Results
Olympic Pipe Line Company Facility Upgrades
Kinder Morgan Harbor Island Terminal - E Yard
Seattle, Washington

		Petroleum Hydrocarbons			Volatile Organic Compounds				RCRA TCLP Metals								RCRA TCLP Volatiles										
Sample ID	Sample Date	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-O (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)	Selinium (mg/L)	Silver (mg/L)	Mercury (mg/L)	Benzene (ug/L)	2-Butanone (ug/L)	Carbon Tetra-chloride (ug/L)	Chloro-benzene (ug/L)	Chloro-form (ug/L)	1,2-Dichloro ethane (ug/L)	1,2-Dichloro ethene (ug/L)	Tetra-chloro-ethene (ug/L)	Toluene (ug/L)	Trichloro-ethene (ug/L)	Vinyl chloride (ug/L)
Soil Cuttings	9/13/2011	14.7	89.4	90.8	<0.0387	<0.0775	<0.0775	<0.232	<1.0	<5.0	<0.20	<1.0	<1.0	<0.20	<1.0	<5.0	<25.0	<250	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0

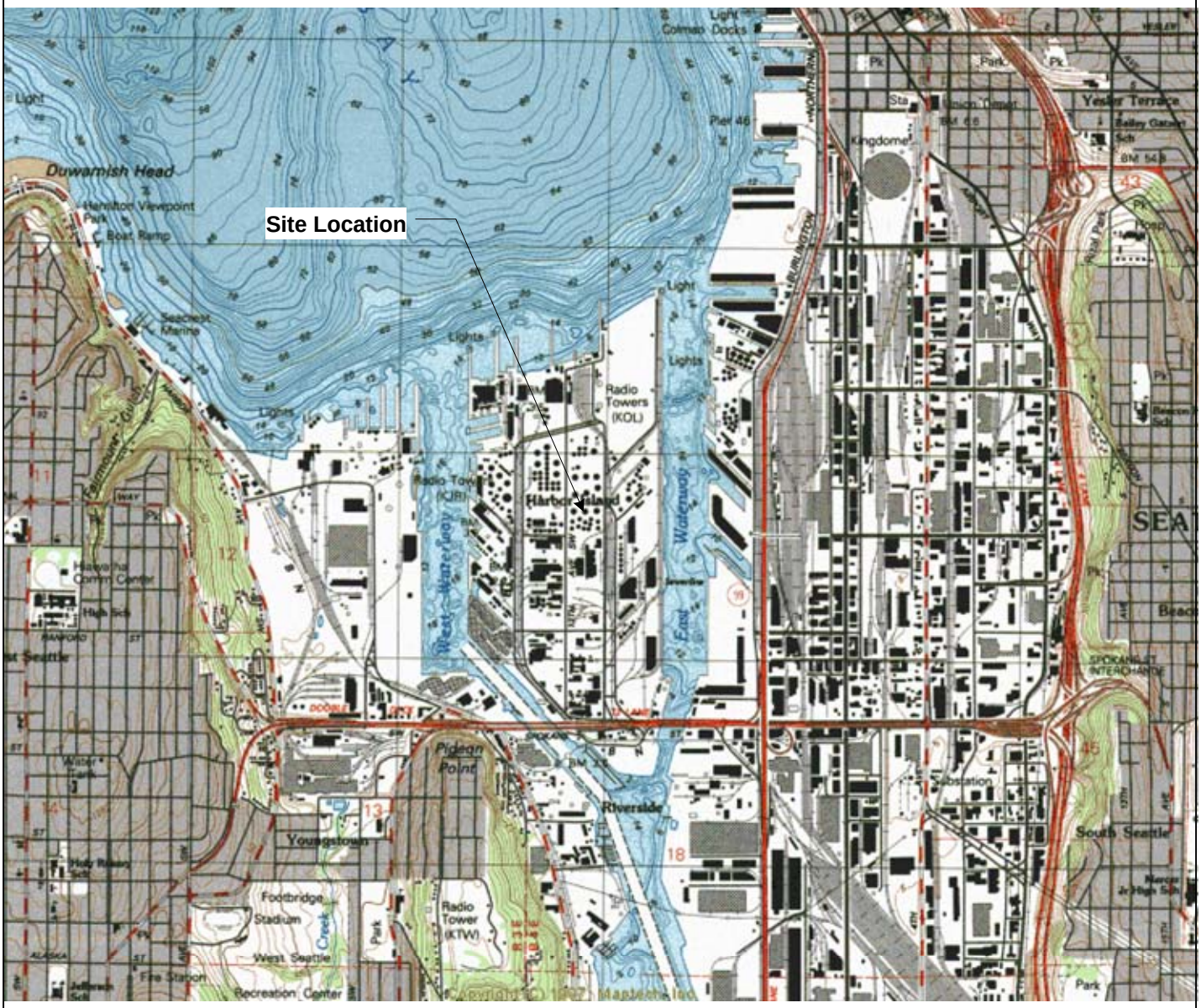
NOTES:
mg/kg = milligrams per kilogram
mg/L = milligrams per Liter
ug/L = micrograms per liter
TPH-G = Total petroleum hydrocarbons-gasoline range by Northwest Method NWTPH-Gx
TPH-D = Total petroleum hydrocarbons-diesel range by Northwest Method NWTPH
TPH-O = Total petroleum hydrocarbons-oil range by Northwest Method NWTPH
Benzene, Toluene, Ethyl-benzene and Total Xylenes by EPA Method 8021B
RCRA TCLP Metals by EPA 6010 MET ICP, TCLP
RCRA TCLP Volatiles by 8260 MSV TCLP
Mercury by EPA 7470 TCLP

Table 2
Summary of Wastewater Sample Analytical Results
Olympic Pipe Line Company Facility Upgrades
Kinder Morgan Harbor Island Terminal - E Yard
Seattle, Washington

		Petroleum Hydrocarbons			Volatile Organic Compounds				RCRA TCLP Metals								RCRA TCLP Volatiles										
Sample ID	Sample Date	TPH-G (mg/L)	TPH-D (mg/L)	TPH-O (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Total Xylenes (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)	Selinium (mg/L)	Silver (mg/L)	Mercury (mg/L)	Benzene (ug/L)	2-Butanone (ug/L)	Carbon Tetra-chloride (ug/L)	Chloro-benzene (ug/L)	Chloro-form (ug/L)	1,2-Dichloro ethane (ug/L)	1,2-Dichloro ethene (ug/L)	Tetra-chloro-ethene (ug/L)	Toluene (ug/L)	Trichloro-ethene (ug/L)	Vinyl chloride (ug/L)
DF-1	9/13/2011	0.749	0.88	0.95	<0.001	<0.001	<0.001	0.0035	<1.0	<5.0	<0.20	<1.0	<1.0	<1.0	<0.20	<5.0	<25.0	<250	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0

NOTES:
mg/L = Milligrams per Liter
ug/L - Micrograms per Liter
TPH-G = Total petroleum hydrocarbons-gasoline range by Northwest Method NWTPH-Gx
TPH-D = Total petroleum hydrocarbons-diesel range by Northwest Method NWTPH-Dx
TPH-O = Total petroleum hydrocarbons-oil range by Northwest Method NWTPH-Dx
Benzene, Toluene, Ethyl-benzene and Total Xylenes by EPA Method 8021B
RCRA TCLP Metals by 6010 ICP, TCLP
RCRA TCLP Volatiles by 8260 MSV TCLP
Mercury by EPA 7470 TCLP

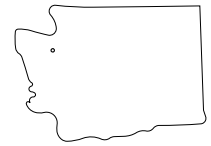
Figures



North

GENERAL NOTES:

BASE MAP USGS 7.5-MINUTE TOPOGRAPHIC MAP
SEATTLE SOUTH, WASHINGTON
1983



QUADRANGLE LOCATION

0 2000 FT

APPROX. SCALE

FIGURE 1

SITE LOCATION MAP

KINDER MORGAN LIQUIDS TERMINALS, LLC
HARBOR ISLAND TERMINAL
2720 13TH AVENUE SOUTHWEST
SEATTLE, WASHINGTON

PROJECT NO. STKM-001-W.0001	DRAWN BY RG
FILE NO. STKM001W.0001	PREPARED BY MM
REVISION NO.	REVIEWED BY DL

anteagroup

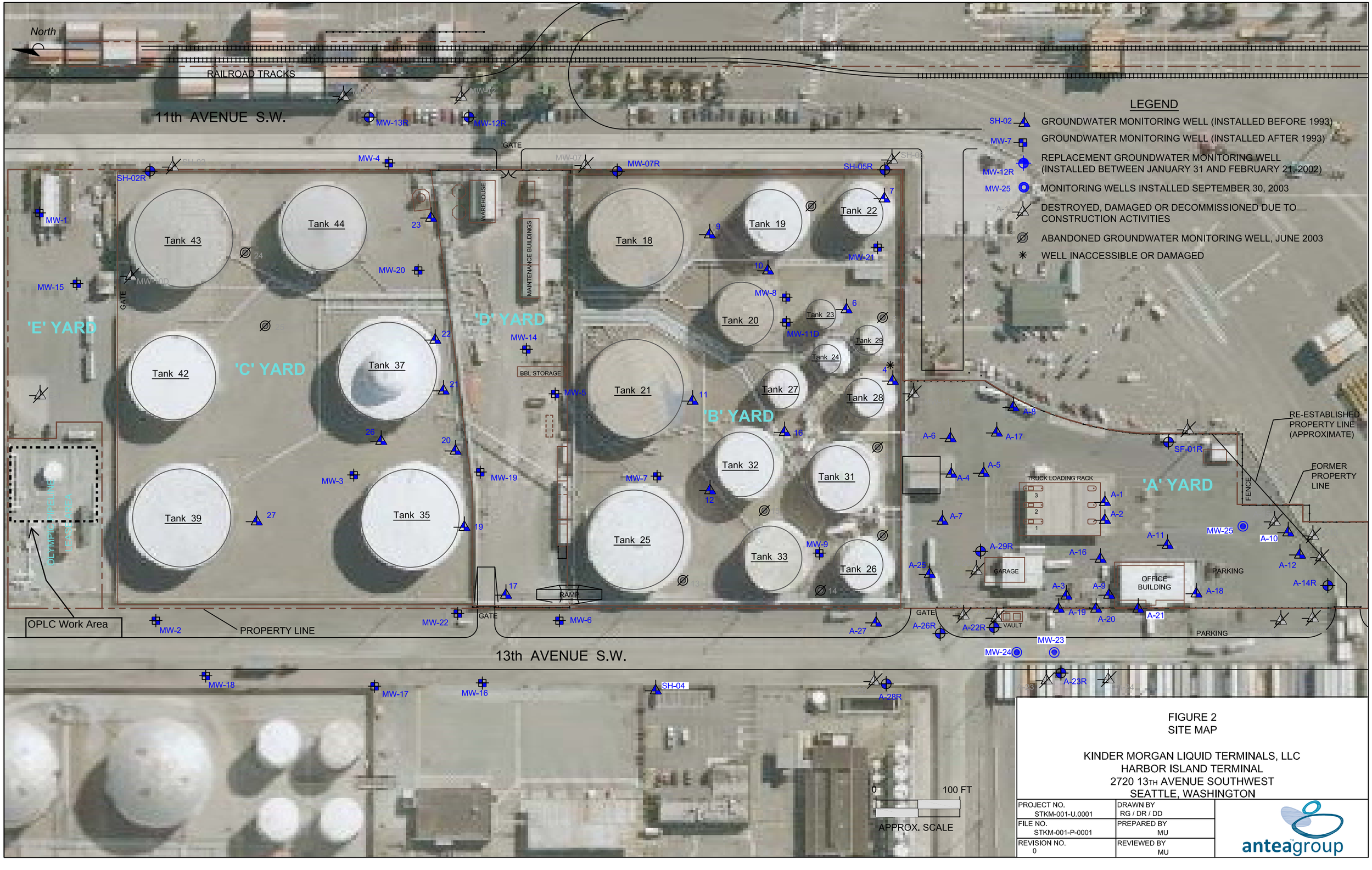


FIGURE 2
SITE MAP

KINDER MORGAN LIQUID TERMINALS, LLC
HARBOR ISLAND TERMINAL
2720 13TH AVENUE SOUTHWEST
SEATTLE, WASHINGTON

PROJECT NO. STKM-001-U.0001	DRAWN BY RG / DR / DD
FILE NO. STKM-001-P-0001	PREPARED BY MU
REVISION NO. 0	REVIEWED BY MU

anteagroup

#4 HEADER WIRE (POSITIVE HEADER) ENCASED IN PVC CONDUIT COMES ABOVE GRADE 1-1/4" RIGID AND RUNS ALONG DIKE WALL

RECTIFIER ID: 210
RECTIFIER LOCATION:
SEATTLE D. F.

RECTIFIER ID: 220
RECTIFIER LOCATION:
SEATTLE LATERAL
DEEPWELL

TEST POINT
BOND BOX
.01 OHM
SHUNTS

NEGATIVE BOND
FOR LATERAL
RECTIFIER

JUNCTION BOX
FOR STATION
ANODES .01OHM
SHUNTS

NEGATIVE BOND
STATION RECTIFIER

ALL THE ANODES
THROUGHOUT
STATIONS

SPLICE

C.P. CABLE

METER PROVER

DEEPWELL

JUNCTION BOX
DEEPWELL
ANODES .01 OHM
SHUNTS

SEE: A-A ELEVATION

PULL BOX
ALL HEADERS
ARE #4 AWG

50'
ANODE
WELL #1

#1
ANODE

#2
ANODE

#3 ANODE

#4 ANODE

#5
ANODE

DIKE WALL

CONCRETE FIREWALL

PROPERTY LINE S.0.00'

FENCE S.1.0'

ABANDONED IN PLACE

ABANDONED 12" FUEL TO B.P.
EQUILON NORTH FUEL
12" FUEL TO EQUILON
12" GASO. TO EQUILON
12" FUEL TO GATX
12" GASO. TO GATX

SEE DETAIL "A"
SHEET D-710-0

STAIRWAY

SUMP

PIERS VIII

PIERS IX

HOIST SUPT.

STRAINER & PIERS

STRAINER & PAD

PIER XXI

PIER XXII

INJECTION PUMP

FIREWALL

FENCE E.245.00'

E.275.22'

UTILITY TANK
1000 BBL.

6" I.B.BM GATE VALVE &
DRAIN PIPE.
FOR DETAIL SEE D-721-0

LOT 9

LOT 10

1'-0"

SANITARY SEWER CONNECTION AT
PROPERTY LINE (APPROX EL. 4±)
SEE DETAIL BELOW

LOT & PROPERTY LINE

FENCE E.66-00'

6" CURB

12" BONDED JET FUEL FROM SHELL

12" C.I.(134 PSI) CITY
WATER LINE & METER.

12" P.S.(SAN.)

NEGATIVE BOND
LATERAL RECTIFIER

CONTROL
BLDG.

SAMPLE
ROOM

1" WATER

2 1/2" WATER

4" C.I.

BUMPER GUARD

PARKING AREA

S.78.64'

E.116.00'

UTILITY WATER TAKE OFF.

134 PSI WATER
PRESSURE

RETENTION POND

SWITCH
GEAR

POWER CO.
TRANSFORMER

FIREWALL
S.80.00'

#4 HEADER WIRE
(POSITIVE HEADER)
ENCASED IN PVC
CONDUIT COMES
ABOVE GRADE 1-1/4"
RIGID AND RUNS
ALONG DIKE WALL

7'~

50'
ANODE
WELL #2

SEE: A-A ELEVATION

6'~

8' DOUBLE
SWING GATE

TO CONTROL BLDG.
SEE DWG. D-713-0
SHEET 1

METER RACK
(SEE DET."92" DWG.
D-224 SHEET 12)

12' ROAD

41'-3 1/2"

SRAIRWAY FTG. A.B. S.101.28'

PIER VIII

SCRAPER
TRAP PAD

CADWELDED 12" NAINLINE FROM RENTON

FENCE S.113.64'

PIER IX
E.171.44'
E.174.69'

UTILITY COMPANY
SERVICE POLE
RUN CONDUIT P-751 10'
UP POLE
RUN CONDUIT T-701 12'
UP POLE
2

90'-0" RADIUS

SHELL'S CONCRETE FIREWALL

LEGEND:
- ANODE
- TEST POINT
- SPLICE

N

0' 20' 40'
GRAPHIC SCALE

DEEPWELL CAP AT GRADE

GRADE

50' of 1"
ALL VENT PIPE

4 - 2" X 84"
CENTER TAP
CAST IRON &
ANODES
WITH #8
HEADER CABLES

40'
ACTIVE

50'

8" NOMINAL
CASING

A-A ELEVATION
50' SEMI-DEEP ANODE SYSTEM (2 PLACES, #1 & #2)
NTS

FIGURE 3

E YARD WORK BY OPLC
KINDER MORGAN LIQUID TERMINALS, LLC
HARBOR ISLAND TERMINAL
SEATTLE, WASHINGTON

anteagroup

Olympic PIPE LINE COMPANY
OLYMPIC PIPE LINE COMPANY
2319 Lind Ave. S.W.
Renton, Washington

ENGINEER	XXX	
	X-X-XX	
DRAFTER	EGM	
	1-26-1	
DESIGNER CHECK	N.K.	
	1-26-1	
DRAFTING CHECK	EGM	
	1-26-1	

SEATTLE DELIVERY FACILITY
PROPOSED 2 PLACES, 50' DEEP BY 8 INCH DIAMETER SEMI-DEEP WELLS
AT RECTIFIER ID: 210 LOCATION
PLAN & ELEVATION VIEW
OLYMPIC PIPELINE COMPANY CATHODIC PROTECTION

SCALE:	DRAWING NO. 1 OF 1	REV. NO.
NOTED	CP-SEA-DF-1-26-11	0

Nick Kitzmiller, Cathodic Protection Specialist designed this on 1/26/11

OPL C.P. CAD, Ed G Martin CP-Seattle DF-1-26-11.dwg Y:\Mile Post - Cathodic Protection\Seattle Del .Fac\ Cathodic Protection Coordinator, N.Kitzmiller B 1=300 1/26/11 2:02 pm

Appendix A

Laboratory Analytical and Forensic Reports and Chain-of-Custody Documentation

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

September 28, 2011

Bryan Taylor
Antea Group
4006 148th Ave NE
Redmond, WA 98052

Dear Mr. Taylor:

Included are the results from the testing of material submitted on September 20, 2011 from the OPLG Seattle DF, F&BI 109275 project. The product sample submitted for forensic evaluation arrived in good condition. Upon arrival, the sample Seattle DF-Product was placed in a refrigerator maintained at 4°C until removed for sample processing.

The sample Seattle DF-Product was extracted and analyzed using a gas chromatograph with a flame ionization detector (GC/FID). The data generated yielded information on the boiling range and general chemical composition of the material present. The GC/FID traces are enclosed. A GC/FID trace of a standard consisting of normal alkanes is also provided for reference purposes.

Please contact us if additional consultation is needed by our firm in the interpretation of the analytical results provided. We appreciate this opportunity to be of service to you and hope you will call if you should have any questions. We will hold your samples for 30 days before disposal unless directed otherwise.

Sincerely,

FRIEDMAN & BRUYA, INC.

Bradley T. Benson
Chemist

Enclosures
NAA0928R.DOC

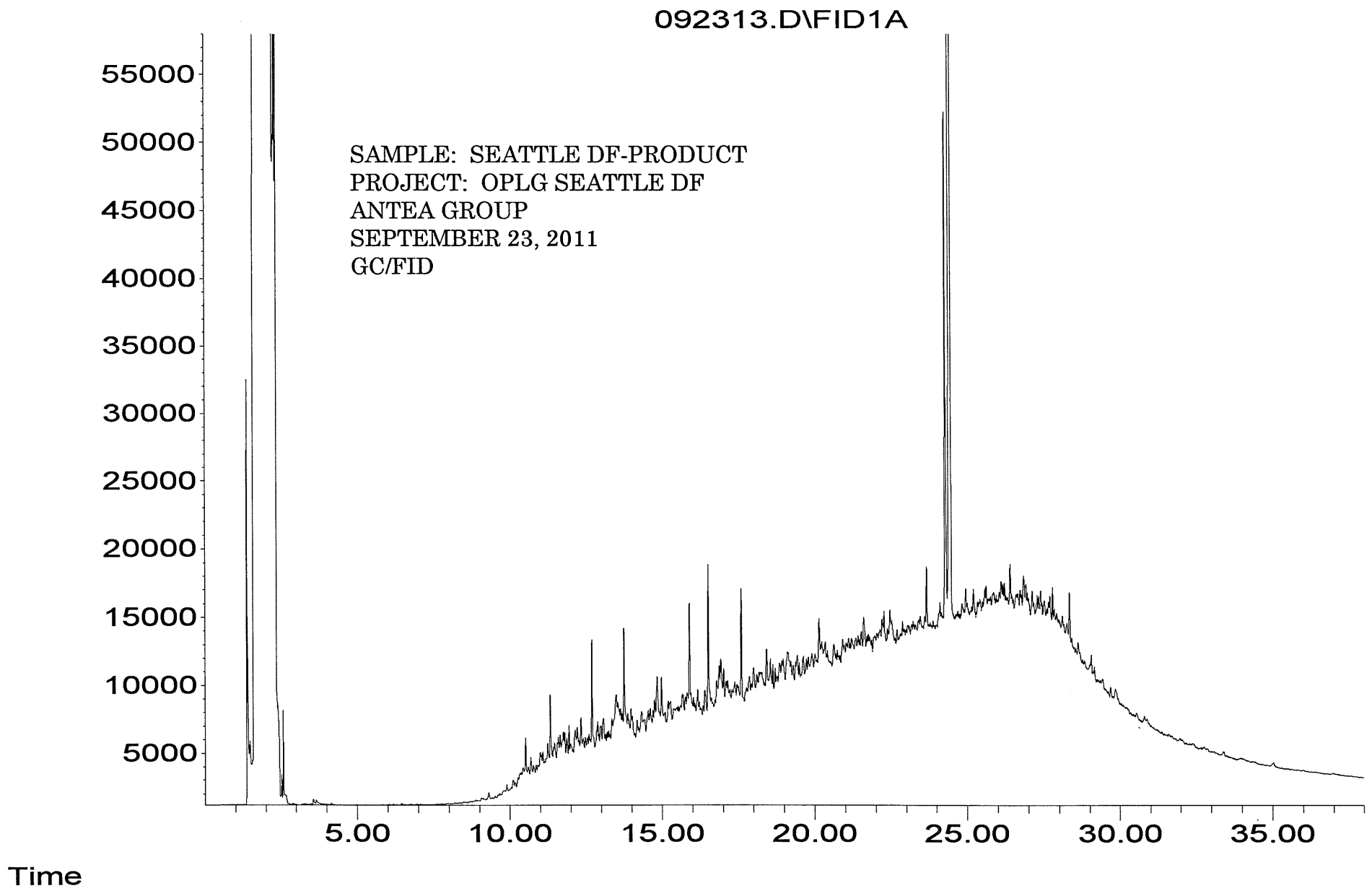
FRIEDMAN & BRUYA, INC.

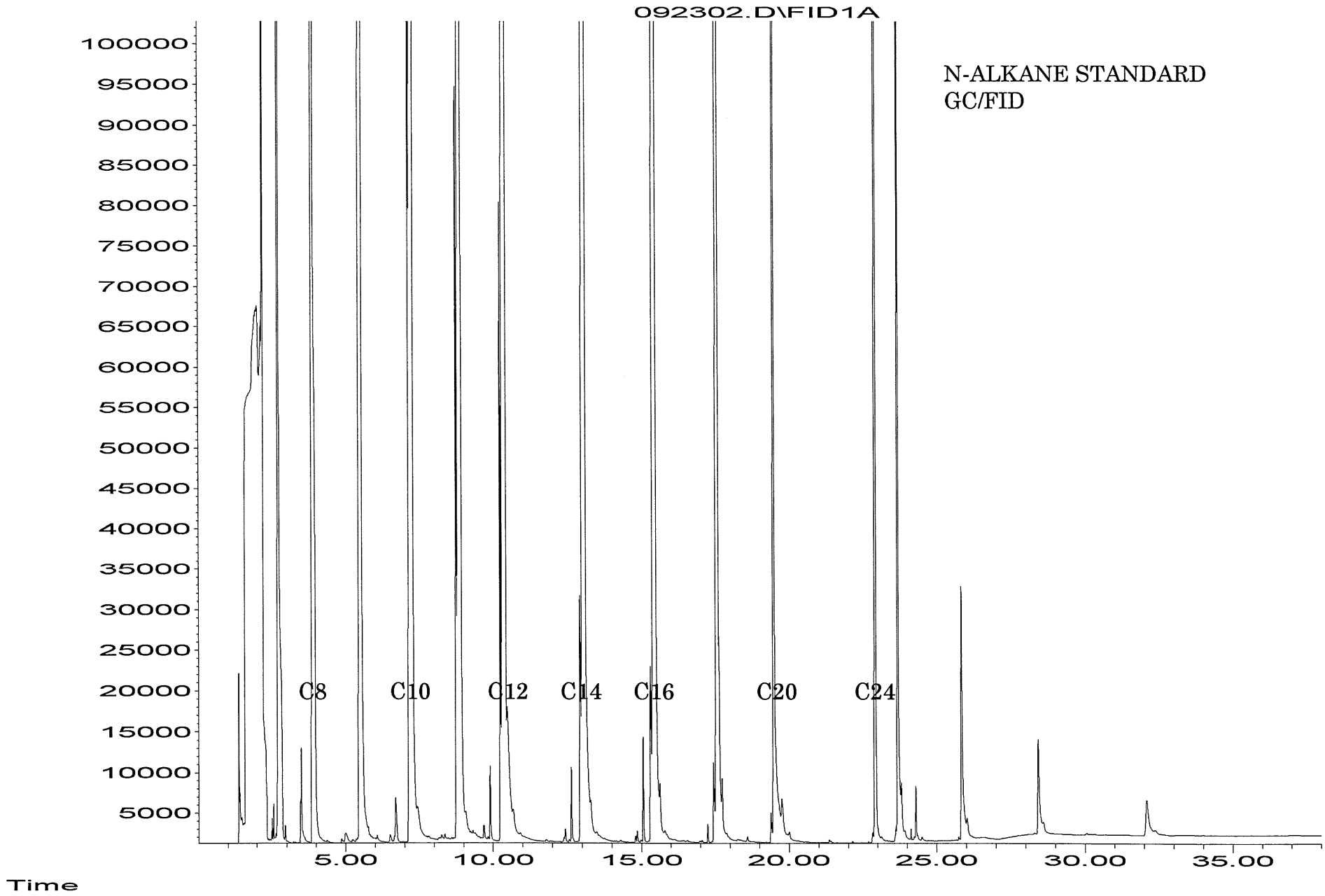
ENVIRONMENTAL CHEMISTS

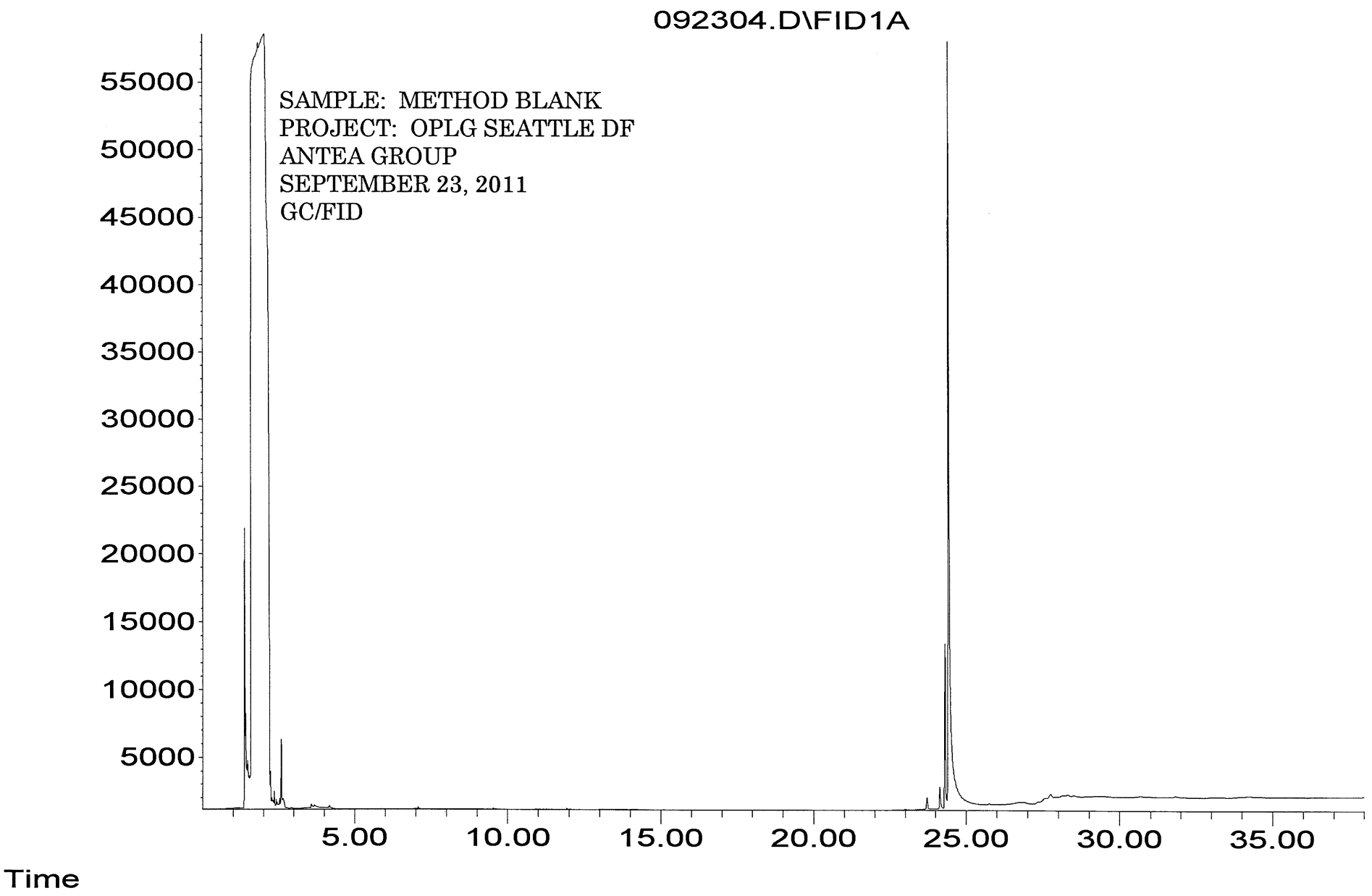
Date of Report: 09/28/11
Date Received: 09/20/11
Project: OPLG Seattle DF, F&BI 109275
Date Extracted: 09/23/11
Date Analyzed: 09/23/11

RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR FORENSIC EVALUATION BY CAPILLARY GAS CHROMATOGRAPHY USING A FLAME IONIZATION DETECTOR (FID)

Sample ID	GC Characterization
Seattle DF-Product	The GC trace using the flame ionization detector (FID) showed the presence of medium to high boiling compounds. The patterns displayed by these peaks are indicative of a high boiling product such as diesel fuel 6, Bunker C, or similar materials. The medium to high boiling compounds appear as an irregular pattern of peaks on top of a broad hump or unresolved complex mixture (UCM). This material elutes from n-C_{12} to beyond n-C_{36} showing a maximum near n-C_{28}. This correlates with a temperature range of approximately 220 °C to beyond 500 °C with a maximum near 430 °C. Within this range, the dominant peaks present are indicative of isoprenoids including norpristane, pristane, and phytane. A discernible pattern of peaks characteristic of the normal alkanes was not present. The abundance of isoprenoids in conjunction with the apparent absence of normal alkanes indicates that the fuel present has undergone substantial biological degradation. The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis.


Response_
092313.D\FID1A
55000
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
SAMPLE: SEATTLE DF-PRODUCT
PROJECT: OPLG SEATTLE DF
ANTEA GROUP
SEPTEMBER 23, 2011
GC/FID
5.00
10.00
15.00
20.00
25.00
30.00
35.00
Time


Response_
092302.D\FID1A
N-ALKANE STANDARD
GC/FID
100000
95000
90000
85000
80000
75000
70000
65000
60000
55000
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
C8
C10
C12
C14
C16
C20
C24
5.00
10.00
15.00
20.00
25.00
30.00
35.00
Time


Response_
092304.D\FID1A
SAMPLE: METHOD BLANK
PROJECT: OPLG SEATTLE DF
ANTEA GROUP
SEPTEMBER 23, 2011
GC/FID
55000
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
5.00
10.00
15.00
20.00
25.00
30.00
35.00
Time

Pace Analytical Services, Inc.
940 South Harney
Seattle, WA 98108
(206)767-5060

September 21, 2011

Bryan Taylor
Antea USA
4006 148th Ave. NE
Redmond, WA 98052

RE: Project: OPLC Seattle DF
Pace Project No.: 259177

Dear Bryan Taylor:
Enclosed are the analytical results for sample(s) received by the laboratory on September 14, 2011. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 09, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

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

Sincerely,

Regina SteMarie

regina.stemarie@pacelabs.com
Project Manager

Enclosures

cc: Thuan Bui, Antea USA
Megan MacDonald, Antea USA
Dan Rowlands, Antea USA

Pace Analytical Services, Inc.
940 South Harney
Seattle, WA 98108
(206)767-5060

CERTIFICATIONS

Project: OPLC Seattle DF
Pace Project No.: 259177

Washington Certification IDs
940 South Harney Street, Seattle, WA 98108
Alaska CS Certification #: UST-025
California Certification #: 01153CA
Florida/NELAP Certification #: E87617
Oregon Certification #: WA200007
Washington Certification #: C555

Pace Analytical Services, Inc.
940 South Harney
Seattle, WA 98108
(206)767-5060

SAMPLE ANALYTE COUNT

Project: OPLC Seattle DF
Pace Project No.: 259177

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
259177001	**DF-1**	NWTPH-Dx	AY1	4	PASI-S
		EPA 6010	BGA	7	PASI-S
		EPA 7470	BGA	1	PASI-S
		EPA 8260	CC	15	PASI-S
		EPA 5030B/8260	CC	8	PASI-S
		NWTPH-Gx	ERB	2	PASI-S
259177002	**Soil Cuttings**	NWTPH-Dx	AY1	4	PASI-S
		NWTPH-Gx	CC	3	PASI-S
		EPA 6010	BGA	7	PASI-S
		EPA 7470	BGA	1	PASI-S
		EPA 8260	CC	15	PASI-S
		EPA 8260	LPM	8	PASI-S
		ASTM D2974-87	KJ1	1	PASI-S

Pace Analytical Services, Inc.
940 South Harney
Seattle, WA 98108
(206)767-5060

ANALYTICAL RESULTS

Project: OPLC Seattle DF
Pace Project No.: 259177

Sample: DF-1 **Lab ID: 259177001** Collected: 09/13/11 10:30 Received: 09/14/11 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS Silica Gel	Analytical Method: NWTPH-Dx Preparation Method: EPA 3510							
Diesel Range SG	**0.88**	mg/L	0.096	1	09/15/11 09:15	09/19/11 18:16		
Motor Oil Range SG	**0.95**	mg/L	0.48	1	09/15/11 09:15	09/19/11 18:16	64742-65-0	
n-Octacosane (S) SG	97	%	50-150	1	09/15/11 09:15	09/19/11 18:16	630-02-4	
o-Terphenyl (S) SG	89	%	50-150	1	09/15/11 09:15	09/19/11 18:16	84-15-1	
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 09/16/11 22:10							
Arsenic	ND	mg/L	1.0	1	09/19/11 09:18	09/20/11 08:53	7440-38-2	
Barium	ND	mg/L	5.0	1	09/19/11 09:18	09/20/11 08:53	7440-39-3	
Cadmium	ND	mg/L	0.20	1	09/19/11 09:18	09/20/11 08:53	7440-43-9	
Chromium	ND	mg/L	1.0	1	09/19/11 09:18	09/20/11 08:53	7440-47-3	
Lead	ND	mg/L	1.0	1	09/19/11 09:18	09/20/11 08:53	7439-92-1	
Selenium	ND	mg/L	0.20	1	09/19/11 09:18	09/20/11 08:53	7782-49-2	
Silver	ND	mg/L	1.0	1	09/19/11 09:18	09/20/11 08:53	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 09/16/11 22:10							
Mercury	ND	ug/L	5.0	1	09/19/11 09:15	09/20/11 09:51	7439-97-6	
8260 MSV TCLP	Analytical Method: EPA 8260 Leachate Method/Date: EPA 1311; 09/16/11 22:10							
Benzene	ND	ug/L	25.0	1		09/20/11 03:09	71-43-2	
2-Butanone (MEK)	ND	ug/L	250	1		09/20/11 03:09	78-93-3	
Carbon tetrachloride	ND	ug/L	25.0	1		09/20/11 03:09	56-23-5	
Chlorobenzene	ND	ug/L	25.0	1		09/20/11 03:09	108-90-7	
Chloroform	ND	ug/L	25.0	1		09/20/11 03:09	67-66-3	
1,2-Dichloroethane	ND	ug/L	25.0	1		09/20/11 03:09	107-06-2	
1,1-Dichloroethene	ND	ug/L	25.0	1		09/20/11 03:09	75-35-4	
Tetrachloroethene	ND	ug/L	25.0	1		09/20/11 03:09	127-18-4	
Toluene	ND	ug/L	25.0	1		09/20/11 03:09	108-88-3	
Trichloroethene	ND	ug/L	25.0	1		09/20/11 03:09	79-01-6	
Vinyl chloride	ND	ug/L	25.0	1		09/20/11 03:09	75-01-4	
1,2-Dichloroethane-d4 (S)	107	%	76-124	1		09/20/11 03:09	17060-07-0	
Toluene-d8 (S)	102	%	83-115	1		09/20/11 03:09	2037-26-5	
4-Bromofluorobenzene (S)	113	%	83-121	1		09/20/11 03:09	460-00-4	
Dibromofluoromethane (S)	104	%	82-121	1		09/20/11 03:09	1868-53-7	
8260 MSV	Analytical Method: EPA 5030B/8260							
Benzene	ND	ug/L	1.0	1		09/20/11 02:52	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		09/20/11 02:52	100-41-4	
Toluene	ND	ug/L	1.0	1		09/20/11 02:52	108-88-3	
Xylene (Total)	**3.5**	ug/L	3.0	1		09/20/11 02:52	1330-20-7	
4-Bromofluorobenzene (S)	106	%	79-121	1		09/20/11 02:52	460-00-4	
Dibromofluoromethane (S)	104	%	81-119	1		09/20/11 02:52	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	72-127	1		09/20/11 02:52	17060-07-0	
Toluene-d8 (S)	101	%	77-120	1		09/20/11 02:52	2037-26-5	

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ANALYTICAL RESULTS

Project: OPLC Seattle DF
Pace Project No.: 259177

Sample: DF-1 **Lab ID: 259177001** Collected: 09/13/11 10:30 Received: 09/14/11 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx MSV	Analytical Method: NWTPH-Gx							
Gasoline Range Organics	**749**	ug/L	50.0	1		09/17/11 02:14		
4-Bromofluorobenzene (S)	107	%	50-150	1		09/17/11 02:14	460-00-4	

Sample: Soil Cuttings **Lab ID: 259177002** Collected: 09/13/11 10:00 Received: 09/14/11 10:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS Silica Gel	Analytical Method: NWTPH-Dx Preparation Method: EPA 3546							
Diesel Range SG	**89.4**	mg/kg	19.4	1	09/14/11 16:25	09/15/11 18:28		
Motor Oil Range SG	**90.8**	mg/kg	77.4	1	09/14/11 16:25	09/15/11 18:28	64742-65-0	
n-Octacosane (S) SG	98	%	50-150	1	09/14/11 16:25	09/15/11 18:28	630-02-4	
o-Terphenyl (S) SG	91	%	50-150	1	09/14/11 16:25	09/15/11 18:28	84-15-1	
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx Preparation Method: NWTPH-Gx							
Gasoline Range Organics	**14.7**	mg/kg	8.0	1	09/19/11 20:30	09/20/11 00:22		
a,a,a-Trifluorotoluene (S)	101	%	50-150	1	09/19/11 20:30	09/20/11 00:22	98-08-8	
4-Bromofluorobenzene (S)	111	%	50-150	1	09/19/11 20:30	09/20/11 00:22	460-00-4	
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 09/16/11 22:10							
Arsenic	ND	mg/L	1.0	1	09/19/11 09:18	09/20/11 09:16	7440-38-2	
Barium	ND	mg/L	5.0	1	09/19/11 09:18	09/20/11 09:16	7440-39-3	
Cadmium	ND	mg/L	0.20	1	09/19/11 09:18	09/20/11 09:16	7440-43-9	
Chromium	ND	mg/L	1.0	1	09/19/11 09:18	09/20/11 09:16	7440-47-3	
Lead	ND	mg/L	1.0	1	09/19/11 09:18	09/20/11 09:16	7439-92-1	
Selenium	ND	mg/L	0.20	1	09/19/11 09:18	09/20/11 09:16	7782-49-2	
Silver	ND	mg/L	1.0	1	09/19/11 09:18	09/20/11 09:16	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 09/16/11 22:10							
Mercury	ND	ug/L	5.0	1	09/19/11 09:15	09/20/11 10:02	7439-97-6	
8260 MSV TCLP	Analytical Method: EPA 8260 Leachate Method/Date: EPA 1311; 09/16/11 22:10							
Benzene	ND	ug/L	25.0	1		09/20/11 03:26	71-43-2	
2-Butanone (MEK)	ND	ug/L	250	1		09/20/11 03:26	78-93-3	
Carbon tetrachloride	ND	ug/L	25.0	1		09/20/11 03:26	56-23-5	
Chlorobenzene	ND	ug/L	25.0	1		09/20/11 03:26	108-90-7	
Chloroform	ND	ug/L	25.0	1		09/20/11 03:26	67-66-3	
1,2-Dichloroethane	ND	ug/L	25.0	1		09/20/11 03:26	107-06-2	
1,1-Dichloroethene	ND	ug/L	25.0	1		09/20/11 03:26	75-35-4	
Tetrachloroethene	ND	ug/L	25.0	1		09/20/11 03:26	127-18-4	
Toluene	ND	ug/L	25.0	1		09/20/11 03:26	108-88-3	
Trichloroethene	ND	ug/L	25.0	1		09/20/11 03:26	79-01-6	

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ANALYTICAL RESULTS

Project: OPLC Seattle DF
Pace Project No.: 259177

Sample: Soil Cuttings **Lab ID: 259177002** Collected: 09/13/11 10:00 Received: 09/14/11 10:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV TCLP	Analytical Method: EPA 8260 Leachate Method/Date: EPA 1311; 09/16/11 22:10							
Vinyl chloride	ND	ug/L	25.0	1		09/20/11 03:26	75-01-4	
1,2-Dichloroethane-d4 (S)	106	%	76-124	1		09/20/11 03:26	17060-07-0	
Toluene-d8 (S)	102	%	83-115	1		09/20/11 03:26	2037-26-5	
4-Bromofluorobenzene (S)	114	%	83-121	1		09/20/11 03:26	460-00-4	
Dibromofluoromethane (S)	104	%	82-121	1		09/20/11 03:26	1868-53-7	
8260 MSV 5035A Med Level VOA	Analytical Method: EPA 8260 Preparation Method: EPA 5035A/5030B							
Benzene	ND	ug/kg	38.7	1	09/14/11 15:00	09/15/11 23:22	71-43-2	
Ethylbenzene	ND	ug/kg	77.5	1	09/14/11 15:00	09/15/11 23:22	100-41-4	
Toluene	ND	ug/kg	77.5	1	09/14/11 15:00	09/15/11 23:22	108-88-3	
Xylene (Total)	ND	ug/kg	232	1	09/14/11 15:00	09/15/11 23:22	1330-20-7	
Dibromofluoromethane (S)	103	%	75-116	1	09/14/11 15:00	09/15/11 23:22	1868-53-7	
Toluene-d8 (S)	97	%	74-124	1	09/14/11 15:00	09/15/11 23:22	2037-26-5	
4-Bromofluorobenzene (S)	98	%	73-128	1	09/14/11 15:00	09/15/11 23:22	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-125	1	09/14/11 15:00	09/15/11 23:22	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**23.5**	%	0.10	1		09/14/11 15:16		

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QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

QC Batch: OEXT/4374
QC Batch Method: EPA 3546
Analysis Method: NWTPH-Dx
Analysis Description: NWTPH-Dx GCS
Associated Lab Samples: 259177002

METHOD BLANK: 85717 Matrix: Solid
Associated Lab Samples: 259177002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range SG	mg/kg	ND	16.0	09/15/11 17:29	
Motor Oil Range SG	mg/kg	ND	64.0	09/15/11 17:29	
n-Octacosane (S) SG	%	103	50-150	09/15/11 17:29	
o-Terphenyl (S) SG	%	99	50-150	09/15/11 17:29	

LABORATORY CONTROL SAMPLE: 85718

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Range SG	mg/kg	500	494	99	56-124	
Motor Oil Range SG	mg/kg	500	457	91	50-150	
n-Octacosane (S) SG	%			99	50-150	
o-Terphenyl (S) SG	%			108	50-150	

SAMPLE DUPLICATE: 85719

Parameter	Units	259177002 Result	Dup Result	RPD	Qualifiers
Diesel Range SG	mg/kg	89.4	77.2	15	
Motor Oil Range SG	mg/kg	90.8	74.4J		
n-Octacosane (S) SG	%	98	103	4	
o-Terphenyl (S) SG	%	91	97	4	

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QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

QC Batch: OEXT/4375
QC Batch Method: EPA 3510
Analysis Method: NWTPH-Dx
Analysis Description: NWTPH-Dx GCS SG
Associated Lab Samples: 259177001

METHOD BLANK: 85774 Matrix: Water
Associated Lab Samples: 259177001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range SG	mg/L	ND	0.080	09/19/11 17:43	
Motor Oil Range SG	mg/L	ND	0.40	09/19/11 17:43	
n-Octacosane (S) SG	%	105	50-150	09/19/11 17:43	
o-Terphenyl (S) SG	%	94	50-150	09/19/11 17:43	

LABORATORY CONTROL SAMPLE: 85775

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Range SG	mg/L	5	4.3	86	51-147	
Motor Oil Range SG	mg/L	5	5.0	99	20-160	
n-Octacosane (S) SG	%			97	50-150	
o-Terphenyl (S) SG	%			101	50-150	

SAMPLE DUPLICATE: 85776

Parameter	Units	259183002 Result	Dup Result	RPD	Qualifiers
Diesel Range SG	mg/L	0.18	0.11	46	
Motor Oil Range SG	mg/L	ND	ND		
n-Octacosane (S) SG	%	97	99	3	
o-Terphenyl (S) SG	%	90	92	2	

SAMPLE DUPLICATE: 85777

Parameter	Units	259186003 Result	Dup Result	RPD	Qualifiers
Diesel Range SG	mg/L	ND	ND		
Motor Oil Range SG	mg/L	ND	ND		
n-Octacosane (S) SG	%	103	100	3	
o-Terphenyl (S) SG	%	87	90	3	

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QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

QC Batch: GCV/2459
QC Batch Method: NWTPH-Gx
Analysis Method: NWTPH-Gx
Analysis Description: NWTPH-Gx Solid GCV
Associated Lab Samples: 259177002

METHOD BLANK: 86281 Matrix: Solid
Associated Lab Samples: 259177002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	5.0	09/19/11 23:10	
4-Bromofluorobenzene (S)	%	113	50-150	09/19/11 23:10	
a,a,a-Trifluorotoluene (S)	%	113	50-150	09/19/11 23:10	

LABORATORY CONTROL SAMPLE: 86282

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	12.5	12.4	99	63-140	
4-Bromofluorobenzene (S)	%			105	50-150	
a,a,a-Trifluorotoluene (S)	%			90	50-150	

SAMPLE DUPLICATE: 86553

Parameter	Units	259177002 Result	Dup Result	RPD	Qualifiers
Gasoline Range Organics	mg/kg	14.7	17.3	17	
4-Bromofluorobenzene (S)	%	111	123	11	
a,a,a-Trifluorotoluene (S)	%	101	117	15	

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QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

QC Batch: MPRP/2479
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET TCLP
Associated Lab Samples: 259177001

METHOD BLANK: 86164 Matrix: Water
Associated Lab Samples: 259177001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	ND	1.0	09/20/11 08:47	
Barium	mg/L	ND	5.0	09/20/11 08:47	
Cadmium	mg/L	ND	0.20	09/20/11 08:47	
Chromium	mg/L	ND	1.0	09/20/11 08:47	
Lead	mg/L	ND	1.0	09/20/11 08:47	
Selenium	mg/L	ND	0.20	09/20/11 08:47	
Silver	mg/L	ND	1.0	09/20/11 08:47	

LABORATORY CONTROL SAMPLE: 86165

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	5	4.9	98	80-120	
Barium	mg/L	5	5.0	101	80-120	
Cadmium	mg/L	5	5.0	100	80-120	
Chromium	mg/L	5	5.2	105	80-120	
Lead	mg/L	5	5.1	101	80-120	
Selenium	mg/L	5	4.8	96	80-120	
Silver	mg/L	2.5	2.5	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 86166 86167

Parameter	Units	259177001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Arsenic	mg/L	ND	5	5	4.9	5.0	99	100	75-125	1	
Barium	mg/L	ND	5	5	ND	5.1	100	101	75-125		
Cadmium	mg/L	ND	5	5	5.0	4.9	99	99	75-125	.4	
Chromium	mg/L	ND	5	5	5.1	5.2	103	103	75-125	.5	
Lead	mg/L	ND	5	5	5.0	5.0	100	101	75-125	.5	
Selenium	mg/L	ND	5	5	4.8	4.9	96	98	75-125	1	
Silver	mg/L	ND	2.5	2.5	2.5	2.5	101	101	75-125	.4	

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QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

QC Batch: MPRP/2480
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET TCLP
Associated Lab Samples: 259177002

METHOD BLANK: 86168 Matrix: Water
Associated Lab Samples: 259177002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	ND	1.0	09/20/11 09:10	
Barium	mg/L	ND	5.0	09/20/11 09:10	
Cadmium	mg/L	ND	0.20	09/20/11 09:10	
Chromium	mg/L	ND	1.0	09/20/11 09:10	
Lead	mg/L	ND	1.0	09/20/11 09:10	
Selenium	mg/L	ND	0.20	09/20/11 09:10	
Silver	mg/L	ND	1.0	09/20/11 09:10	

LABORATORY CONTROL SAMPLE: 86169

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	5	5.2	104	80-120	
Barium	mg/L	5	5.1	103	80-120	
Cadmium	mg/L	5	5.1	102	80-120	
Chromium	mg/L	5	5.1	103	80-120	
Lead	mg/L	5	5.2	104	80-120	
Selenium	mg/L	5	5.2	103	80-120	
Silver	mg/L	2.5	2.6	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 86170 86171

Parameter	Units	259177002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Arsenic	mg/L	ND	5	5	5.0	5.0	100	99	75-125	.9	
Barium	mg/L	ND	5	5	5.2	5.2	100	100	75-125	.4	
Cadmium	mg/L	ND	5	5	4.9	5.0	99	99	75-125	.5	
Chromium	mg/L	ND	5	5	5.1	5.2	101	103	75-125	2	
Lead	mg/L	ND	5	5	5.0	5.0	99	100	75-125	.3	
Selenium	mg/L	ND	5	5	4.9	4.9	98	98	75-125	.2	
Silver	mg/L	ND	2.5	2.5	2.5	2.5	101	102	75-125	.04	

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QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

QC Batch: MERP/1522
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury TCLP
Associated Lab Samples: 259177001

METHOD BLANK: 86184 Matrix: Water
Associated Lab Samples: 259177001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	5.0	09/20/11 09:47	

LABORATORY CONTROL SAMPLE: 86185

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	15	15.4	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 86186 86187

Parameter	Units	259177001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Mercury	ug/L	ND	15	15	15.3	15.2	102	101	75-125	.8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

QC Batch: MERP/1523
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury TCLP
Associated Lab Samples: 259177002

METHOD BLANK: 86188 Matrix: Water
Associated Lab Samples: 259177002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	5.0	09/20/11 09:58	

LABORATORY CONTROL SAMPLE: 86189

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	15	15.2	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 86190 86191

Parameter	Units	259177002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Mercury	ug/L	ND	15	15	15.4	15.5	103	104	75-125	1	

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QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

QC Batch: MSV/5418 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV TCLP
Associated Lab Samples: 259177001, 259177002

METHOD BLANK: 86272 Matrix: Water
Associated Lab Samples: 259177001, 259177002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	ug/L	ND	0.50	09/20/11 02:01	
1,2-Dichloroethane	ug/L	ND	0.50	09/20/11 02:01	
2-Butanone (MEK)	ug/L	ND	5.0	09/20/11 02:01	
Benzene	ug/L	ND	0.50	09/20/11 02:01	
Carbon tetrachloride	ug/L	ND	0.50	09/20/11 02:01	
Chlorobenzene	ug/L	ND	0.50	09/20/11 02:01	
Chloroform	ug/L	ND	0.50	09/20/11 02:01	
Tetrachloroethene	ug/L	ND	0.50	09/20/11 02:01	
Toluene	ug/L	ND	0.50	09/20/11 02:01	
Trichloroethene	ug/L	ND	0.50	09/20/11 02:01	
Vinyl chloride	ug/L	ND	0.50	09/20/11 02:01	
1,2-Dichloroethane-d4 (S)	%	105	76-124	09/20/11 02:01	
4-Bromofluorobenzene (S)	%	111	83-121	09/20/11 02:01	
Dibromofluoromethane (S)	%	104	82-121	09/20/11 02:01	
Toluene-d8 (S)	%	102	83-115	09/20/11 02:01	

METHOD BLANK: 86320 Matrix: Water
Associated Lab Samples: 259177001, 259177002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	ug/L	ND	25.0	09/20/11 02:18	
1,2-Dichloroethane	ug/L	ND	25.0	09/20/11 02:18	
2-Butanone (MEK)	ug/L	ND	250	09/20/11 02:18	
Benzene	ug/L	ND	25.0	09/20/11 02:18	
Carbon tetrachloride	ug/L	ND	25.0	09/20/11 02:18	
Chlorobenzene	ug/L	ND	25.0	09/20/11 02:18	
Chloroform	ug/L	ND	25.0	09/20/11 02:18	
Tetrachloroethene	ug/L	ND	25.0	09/20/11 02:18	
Toluene	ug/L	ND	25.0	09/20/11 02:18	
Trichloroethene	ug/L	ND	25.0	09/20/11 02:18	
Vinyl chloride	ug/L	ND	25.0	09/20/11 02:18	
1,2-Dichloroethane-d4 (S)	%	107	76-124	09/20/11 02:18	
4-Bromofluorobenzene (S)	%	114	83-121	09/20/11 02:18	
Dibromofluoromethane (S)	%	106	82-121	09/20/11 02:18	
Toluene-d8 (S)	%	102	83-115	09/20/11 02:18	

Pace Analytical Services, Inc.
940 South Harney
Seattle, WA 98108
(206)767-5060

QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

LABORATORY CONTROL SAMPLE: 86273

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/L	1000	846	85	83-151	
1,2-Dichloroethane	ug/L	1000	806	81	72-142	
2-Butanone (MEK)	ug/L	2000	1200	60	40-160	
Benzene	ug/L	1000	825	82	64-139	
Carbon tetrachloride	ug/L	1000	773	77	55-160	
Chlorobenzene	ug/L	1000	784	78	73-134	
Chloroform	ug/L	1000	836	84	75-141	
Tetrachloroethene	ug/L	1000	820	82	40-139	
Toluene	ug/L	1000	807	81	68-136	
Trichloroethene	ug/L	1000	796	80	73-143	
Vinyl chloride	ug/L	1000	843	84	50-147	
1,2-Dichloroethane-d4 (S)	%			102	76-124	
4-Bromofluorobenzene (S)	%			102	83-121	
Dibromofluoromethane (S)	%			105	82-121	
Toluene-d8 (S)	%			99	83-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 86313 86314

Parameter	Units	259177001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,1-Dichloroethene	ug/L	ND	1000	1000	939	954	94	95	83-151	2	
1,2-Dichloroethane	ug/L	ND	1000	1000	902	917	90	92	72-142	2	
2-Butanone (MEK)	ug/L	ND	2000	2000	1360	1620	68	81	40-160	17	
Benzene	ug/L	ND	1000	1000	924	919	92	92	64-139	.6	
Carbon tetrachloride	ug/L	ND	1000	1000	878	902	88	90	55-160	3	
Chlorobenzene	ug/L	ND	1000	1000	876	868	88	87	73-134	.9	
Chloroform	ug/L	ND	1000	1000	944	948	93	94	75-141	.4	
Tetrachloroethene	ug/L	ND	1000	1000	884	880	88	88	40-139	.5	
Toluene	ug/L	ND	1000	1000	902	892	90	89	68-136	1	
Trichloroethene	ug/L	ND	1000	1000	1020	1060	102	106	73-143	4	
Vinyl chloride	ug/L	ND	1000	1000	943	961	94	96	50-147	2	
1,2-Dichloroethane-d4 (S)	%						103	105	76-124		
4-Bromofluorobenzene (S)	%						106	105	83-121		
Dibromofluoromethane (S)	%						105	106	82-121		
Toluene-d8 (S)	%						101	101	83-115		

Pace Analytical Services, Inc.
940 South Harney
Seattle, WA 98108
(206)767-5060

QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

QC Batch: MSV/5423
QC Batch Method: EPA 5030B/8260
Analysis Method: EPA 5030B/8260
Analysis Description: 8260 MSV Water 10 mL Purge
Associated Lab Samples: 259177001

METHOD BLANK: 86287 Matrix: Water
Associated Lab Samples: 259177001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	09/20/11 02:01	
Ethylbenzene	ug/L	ND	1.0	09/20/11 02:01	
Toluene	ug/L	ND	1.0	09/20/11 02:01	
Xylene (Total)	ug/L	ND	3.0	09/20/11 02:01	
1,2-Dichloroethane-d4 (S)	%	105	72-127	09/20/11 02:01	
4-Bromofluorobenzene (S)	%	111	79-121	09/20/11 02:01	
Dibromofluoromethane (S)	%	104	81-119	09/20/11 02:01	
Toluene-d8 (S)	%	102	77-120	09/20/11 02:01	

LABORATORY CONTROL SAMPLE: 86386

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	16.9	85	66-123	
Ethylbenzene	ug/L	20	16.8	84	67-122	
Toluene	ug/L	20	16.4	82	64-118	
Xylene (Total)	ug/L	60	47.8	80	68-122	
1,2-Dichloroethane-d4 (S)	%			108	72-127	
4-Bromofluorobenzene (S)	%			106	79-121	
Dibromofluoromethane (S)	%			106	81-119	
Toluene-d8 (S)	%			101	77-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 86291 86292

Parameter	Units	259121006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/L	9.3	20	20	22.9	26.2	68	84	63-138	13	
Ethylbenzene	ug/L		20	20	305	308	164	180	65-135	1	
Toluene	ug/L	ND	20	20	13.5	16.7	64	80	64-128	22	
Xylene (Total)	ug/L	23.3	60	60	59.2	67.1	60	73	65-133	12	M1
1,2-Dichloroethane-d4 (S)	%						103	102	72-127		
4-Bromofluorobenzene (S)	%						103	103	79-121		
Dibromofluoromethane (S)	%						104	105	81-119		
Toluene-d8 (S)	%						99	100	77-120		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
940 South Harney
Seattle, WA 98108
(206)767-5060

QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

QC Batch: MSV/5390
QC Batch Method: EPA 5035A/5030B
Analysis Method: EPA 8260
Analysis Description: 8260 MSV 5035A Medium Soil
Associated Lab Samples: 259177002

METHOD BLANK: 86283 Matrix: Solid
Associated Lab Samples: 259177002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	25.0	09/15/11 19:23	
Ethylbenzene	ug/kg	ND	50.0	09/15/11 19:23	
Toluene	ug/kg	ND	50.0	09/15/11 19:23	
Xylene (Total)	ug/kg	ND	150	09/15/11 19:23	
1,2-Dichloroethane-d4 (S)	%	106	70-125	09/15/11 19:23	
4-Bromofluorobenzene (S)	%	101	73-128	09/15/11 19:23	
Dibromofluoromethane (S)	%	104	75-116	09/15/11 19:23	
Toluene-d8 (S)	%	98	74-124	09/15/11 19:23	

LABORATORY CONTROL SAMPLE: 86284

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	1000	893	89	71-123	
Ethylbenzene	ug/kg	1000	895	90	71-123	
Toluene	ug/kg	1000	867	87	69-118	
Xylene (Total)	ug/kg	3000	2560	85	71-122	
1,2-Dichloroethane-d4 (S)	%			107	70-125	
4-Bromofluorobenzene (S)	%			99	73-128	
Dibromofluoromethane (S)	%			106	75-116	
Toluene-d8 (S)	%			99	74-124	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 86285 86286

Parameter	Units	259246001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/kg	ND	597	597	769	658	129	110	68-137	16	
Ethylbenzene	ug/kg	ND	597	597	690	631	114	104	64-136	9	
Toluene	ug/kg	ND	597	597	645	612	107	101	65-130	5	
Xylene (Total)	ug/kg	ND	1790	1790	2070	1870	114	103	63-134	11	
1,2-Dichloroethane-d4 (S)	%						101	101	70-125		
4-Bromofluorobenzene (S)	%						97	97	73-128		
Dibromofluoromethane (S)	%						101	103	75-116		
Toluene-d8 (S)	%						98	97	74-124		

Pace Analytical Services, Inc.
940 South Harney
Seattle, WA 98108
(206)767-5060

QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

QC Batch: MSV/5406
QC Batch Method: NWTPH-Gx
Analysis Method: NWTPH-Gx
Analysis Description: NWTPH-Gx MSV Water
Associated Lab Samples: 259177001

METHOD BLANK: 86016 Matrix: Water
Associated Lab Samples: 259177001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	ug/L	ND	50.0	09/16/11 20:15	
4-Bromofluorobenzene (S)	%	111	50-150	09/16/11 20:15	

LABORATORY CONTROL SAMPLE: 86017

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	ug/L	500	491	98	65-139	
4-Bromofluorobenzene (S)	%			108	50-150	

SAMPLE DUPLICATE: 86246

Parameter	Units	259108010 Result	Dup Result	RPD	Qualifiers
Gasoline Range Organics	ug/L	ND	11.7J		
4-Bromofluorobenzene (S)	%	110	112	2	

SAMPLE DUPLICATE: 86247

Parameter	Units	259128001 Result	Dup Result	RPD	Qualifiers
Gasoline Range Organics	ug/L	ND	13J		
4-Bromofluorobenzene (S)	%	112	112	.7	

Pace Analytical Services, Inc.
940 South Harney
Seattle, WA 98108
(206)767-5060

QUALITY CONTROL DATA

Project: OPLC Seattle DF
Pace Project No.: 259177

QC Batch: PMST/1822
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 259177002

SAMPLE DUPLICATE: 85728

Parameter	Units	259175006 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	13.3	14.9	11	

SAMPLE DUPLICATE: 85729

Parameter	Units	259175007 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	12.8	13.5	6	

Pace Analytical Services, Inc.
940 South Harney
Seattle, WA 98108
(206)767-5060

QUALIFIERS

Project: OPLC Seattle DF
Pace Project No.: 259177

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel Clean-Up

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

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

LABORATORIES

PASI-S	Pace Analytical Services - Seattle

ANALYTE QUALIFIERS

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

Pace Analytical Services, Inc.
940 South Harney
Seattle, WA 98108
(206)767-5060

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: OPLC Seattle DF
Pace Project No.: 259177

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
259177002	**Soil Cuttings**	EPA 3546	OEXT/4374	NWTPH-Dx	GCSV/2903
259177001	**DF-1**	EPA 3510	OEXT/4375	NWTPH-Dx	GCSV/2905
259177002	**Soil Cuttings**	NWTPH-Gx	GCV/2459	NWTPH-Gx	GCV/2462
259177001	**DF-1**	EPA 3010	MPRP/2479	EPA 6010	ICP/2365
259177002	**Soil Cuttings**	EPA 3010	MPRP/2480	EPA 6010	ICP/2366
259177001	**DF-1**	EPA 7470	MERP/1522	EPA 7470	MERC/1536
259177002	**Soil Cuttings**	EPA 7470	MERP/1523	EPA 7470	MERC/1537
259177001	**DF-1**	EPA 8260	MSV/5418		
259177002	**Soil Cuttings**	EPA 8260	MSV/5418		
259177001	**DF-1**	EPA 5030B/8260	MSV/5423		
259177002	**Soil Cuttings**	EPA 5035A/5030B	MSV/5390	EPA 8260	MSV/5420
259177001	**DF-1**	NWTPH-Gx	MSV/5406		
259177002	**Soil Cuttings**	ASTM D2974-87	PMST/1822		

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CHAIN-OF-CUSTODY / Analytical Request Document

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

259177

Page: 1 of 1

1470965

Section A Required Client Information:

Company: Antea Group
Address: 4006 148th Avenue NE
Redmond, WA 98074
Email To: bryan.taylor@anteagroup.com
Phone: 425-260-9321 Fax:
Requested Due Date/TAT: 1 Week TAT

Section B Required Project Information:

Report To: (Same)
Copy To:
Purchase Order No.:
Project Name: OPLC Seattle DF
Project Number: OPLC GEN

Section C Invoice Information:

Attention: Same
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager: Gina Ste. Marie
Pace Profile #: 22139/L12 #13

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☒ RCRA ☐ OTHER

Site Location STATE: WA

Section D Required Client Information

Matrix Codes MATRIX / CODE

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	BTEX	TPHg	TPHd	TCLP Metals	TCLP Volatiles	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	DF-1	WW	G	9/13/11	1030	—	—	—	16				9			1			X	X	X	X	X		
2	Soil Cuttings	SL	G	9/13/11	1000	—	—	—	6	5									X	X	X	X	X		
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Bryan Taylor/Antea	9/14/11	0900	Bulk Pace	9/14/11	0915				
	Bulk Pace	9/14/11	1030	Colette Weaver/PACE	091411	1030	4.3	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bryan Taylor

SIGNATURE of SAMPLER: BT

DATE Signed (MM/DD/YY): 9/13/2011

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

F-ALL-Q-020rev.07, 15-May-2007

Sample Container Count

259177

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CLIENT: Antea

COC PAGE 1 of 1
COC ID# 14709965

Sample Line Item	VG9H	AG1H	AG1U	BG1H	BP1U	BP2U	BP3U	BP2N	BP2S	WGFU	WGKU	VG9U	DG9M	VG9W	Comments
1	8	1 <2				1						6			
2											3		1	2	
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															Trip Blank? NO

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

259177

Sample Condition Upon Receipt

Pace Analytical

Client Name: Antea Project #

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other

Tracking #:

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals intact: ☐ Yes ☐ No

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other Temp. Blank Yes ✓ No

Thermometer Used 132013 or 101731962 or 226099 Type of Ice: Wet (Blue) None ☐ Samples on ice, cooling process has begun

Cooler Temperature 4.3c Biological Tissue is Frozen: Yes No

Temp should be above freezing ≤ 6°C

Comments:

Date and Initials of person examining contents: 09/14/11 CW

Chain of Custody Present:	☑Yes	☐No	☐N/A
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A
Short Hold Time Analysis (<72hr):	☐Yes	☑No	☐N/A
Rush Turn Around Time Requested:	☑Yes	☐No	☐N/A
Follow Up / Hold Analysis Requested:	☐Yes	☑No	☐N/A
Sufficient Volume:	☑Yes	☐No	☐N/A
Correct Containers Used:	☑Yes	☐No	☐N/A
-Pace Containers Used:	☑Yes	☐No	☐N/A
Containers Intact:	☑Yes	☐No	☐N/A
Filtered volume received for Dissolved tests	☐Yes	☐No	☑N/A
Sample Labels match COC:	☑Yes	☐No	☐N/A
-Includes date/time/ID/Analysis Matrix: WT/SL			
All containers needing preservation have been checked.	☑Yes	☐No	☐N/A
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes	☐No	☐N/A
Exceptions: VOA, coliform, TOC, O&G			
Samples checked for dechlorination:	☐Yes	☐No	☑N/A
Headspace in VOA Vials (>6mm):	☐Yes	☑No	☐N/A
Trip Blanks Present:	☐Yes	☑No	☐N/A
Trip Blank Custody Seals Present	☐Yes	☐No	☑N/A
Pace Trip Blank Creation Date:			

1.
2.
3.
4.
5.
6.
7. 1 week
8.
9.
10.
11.
12.
13.
14.

Initial when completed	Lot # of added preservative

15.
16. All 8 ~~4~~ voas received have
17. Sediment in them, the amber also has sediment.

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: RSM **Date:** 09/14/11

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

Appendix B

Water Disposal Manifest

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

1433064-15540

HAZMAT BILL OF LADING/MANIFEST

1. Offeror's ID Number	2. Page 1 of	3. Emergency Response Phone	4. Tracking Number
WAD000641738	1	(800)321-8642	1433064-15540

5. Offeror's Name and Mailing Address

SEATTLE DF C/O BP/OLYMPIC PIPE LINE COMPANY /
2201 LIND AVE SW STE 270
RENTON, WA 98012

Offeror's Phone:

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

BP PIPELINES
2444 13TH AVE SW
SEATTLE, WA 98134
GEN: 70735

6. Transporter 1 Company Name

MP Environmental Services
~~PHILIP WEST INDUSTRIAL SERVICES~~

U.S. EPA ID Number: CAT000624247 ~~CAR000177527~~ D-S.

7. Transporter 2 Company Name

U.S. EPA ID Number:

8. Designated Facility Name and Site Address

HERITAGE ENVIRONMENTAL SERVICES
284 E STOREY RD
COOLIDGE, AZ 85128

Facility's Phone: (520)723-4167

U.S. EPA ID Number: AZD081705402

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
	1. NON-DOT/NON-RCRA REGULATED	32	55 DM gal	1769 gal	G
	2.				
	3.				
	4.				
	5.				
	6.				
	7.				

13. Special Handling Instructions and Additional Information

1.W3_Q645214

PROJECT # 931263

~~[15596561]~~

14. 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.

Offeror's Printed/Typed Name	Signature	Month	Day	Year
Paula Nicklie	Paula Nicklie	12	1	11

15. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name	Signature	Month	Day	Year
DENNIS SAMS	Dennis Sams	12	2	11
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

16. Discrepancy

17. Designated Facility Owner or Operator: Certification of receipt of hazardous Bill of Lading/Manifest covered by the manifest except as noted in item 16

Printed/Typed Name	Signature	Month	Day	Year
David P. Wendling	David P. Wendling	12	08	11

OFFEROR

TRANSPORTER

DESIGNATED FACILITY

DESIGNATED FACILITY TO OFFEROR