

BP Oil Station 11076
Edmonds
Release 2107



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

May 15, 2012

Ms. Gayle Garbush
Washington Department of Ecology
Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008

Subject: Former BP Facility No. 11096
7601 Lake Ballinger Way, Edmonds, WA

Ms. Garbush:

The following correspondence is attached for your review:

- Groundwater Monitoring Report – May 14, 2012

Please contact me if you have additional questions or require additional information regarding the above referenced site.

Sincerely,

Markham Hurd
Consultant
ANTEA GROUP

cc: Paul Supple, Atlantic Richfield Company
Markham Hurd, Antea Group



ANNUAL GROUNDWATER MONITORING REPORT

Year of 2011

Former BP Facility No. 11096

7601 Lake Ballinger way, Edmonds, WA

*AnteaTM Group Project No. 11096EA111A
May 14, 2012*

Prepared for:
Atlantic Richfield Company
2010 Crow Canyon Place, Suite 150
San Ramon, CA 94583

Prepared by:
AnteaTM Group
4006 148th Avenue NE
Redmond, WA 98052
800 477 7411

ANNUAL GROUNDWATER MONITORING REPORT

Atlantic Richfield Company

Year of 2011

May 14, 2012

Former BP Facility No.: 11096
Address: 7601 Lake Ballinger Way, Edmonds, WA
Atlantic Richfield Project Manager: Paul Supple
Consulting Co./Contact Person: Antea Group / Markham Hurd
Consultant Project Number: 11096EA11A
Primary Agency/Regulatory ID No.: Washington State Department of Ecology / UST ID# 10182

WORK PERFORMED DURING 2011:

- Antea Group conducted annual groundwater monitoring and sampling on November 29, 2011.
- Antea Group prepared this annual groundwater monitoring report.

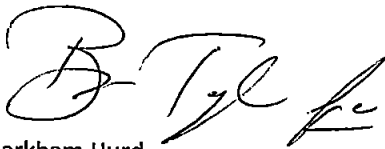
WORK SCHEDULED FOR 2012:

- Antea Group will conduct quarterly groundwater monitoring and sampling.
- Antea Group will prepare a semi-annual groundwater monitoring report.

Current Phase of Project:	Monitoring
Frequency of Groundwater Sampling and Monitoring:	Quarterly
Are LPH Present On-Site:	No
LPH Recovered this Reporting Period:	None
Cumulative LPH Recovered to Date:	None
Amount of Soil Removed to Date:	550 cubic yards (RZA-AGRA, Subsurface Investigation 1991) 500 cubic yards (RZA-AGRA, UST Removal Activities 1991)
Current Remediation Techniques:	Natural Attenuation
Approximate Depth to Groundwater:	45.88 to 48.16 ft
Groundwater Gradient:	North
	<0.01 ft/linear ft

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.

Sincerely,

A handwritten signature in black ink, appearing to read 'Markham Hurd', written over a horizontal line.

Markham Hurd
Consultant
ANTEA GROUP

Enclosures: Table 1 – Summary of Groundwater Data
 Figure 1 – Site Location Map
 Figure 2 – Site Aerial Map
 Figure 3 – Inferred Water Table Contour Map – 11/29/11
 Pace Analytical Lab Report
 Field Data Sheet

TABLE 1
SUMMARY OF GROUNDWATER DATA
FORMER BP FACILITY NO. 11096
7601 LAKE BALLINGER WAY
EDMONDS, WASHINGTON

Well	TOC (feet)	Date Sampled	Depth to Water (feet)	GW Elevation (feet)	Dissolved Oxygen (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)	1,2-Dibromoethane (ug/L)	1,2-Dichloroethane (ug/L)	TPH-G (ug/L)	TPH-D (ug/L)	TPH-O (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Comments
MW-1	97.64	5/19/1993	46.78	50.86	NM	<0.5	<0.5	<0.5	<1	NA	NA	<50	1,500	NA	4	<3	
MW-1	97.64	8/16/1993	46.76	50.88	NM	<0.5	<0.5	<0.5	<1	NA	NA	<50	<50	NA	16	<3	
MW-1	97.64	10/19/1993	50.24	47.40	NM	<0.5	<0.5	<0.5	<1	NA	NA	<50	<250	NA	43	<2	
MW-1	97.64	3/8/1994	47.36	50.28	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	6.1	<3	
MW-1	97.64	6/22/1994	47.44	50.20	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	<250	NA	NA	NA	
MW-1	97.64	9/23/1994	47.74	49.90	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-1	97.64	12/9/1994	47.85	49.79	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-1	97.64	3/1/1995	48.40	49.24	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-1	97.64	6/7/1995	47.11	50.53	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-1	97.64	8/28/1995	47.21	50.43	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-1	97.64	11/29/1995	47.22	50.42	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-1	97.64	3/6/1996	46.69	50.95	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-1	97.64	6/4/1996	46.15	51.49	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-1	97.64	8/29/1996	46.15	51.49	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-1	97.64	12/5/1996	46.06	51.58	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-1	97.64	3/10/1997	45.19	52.45	NM	<0.5	<0.5	<0.5	<1.5	NA	NA	<100	NA	NA	NA	NA	
MW-1	97.64	5/7/1997	44.55	53.09	NM	<0.5	<0.5	<0.5	<1.5	NA	NA	<100	<250	NA	NA	NA	
MW-1	97.64	9/3/1997	44.75	52.89	NM	<0.5	<0.5	<0.5	<1.5	NA	NA	<100	<250	NA	NA	NA	
MW-1	97.64	12/10/2010	47.00	50.64	11.9	<0.50	<0.50	<0.50	<1.0	NA	NA	<50	NA	NA	2.0	<2.0	NP
MW-1	97.64	11/29/2011	46.35	51.29	NM	<1.0	<1.0	<1.0	<3.0	NA	NA	<50.0	<75	<380	<10.0	<10.0	NP
MW-2	99.46	5/19/1993	49.08	50.38	NM	<0.5	<0.5	<0.5	<1	NA	NA	<50	4,200	NA	4	<3	
MW-2	99.46	8/16/1993	49.07	50.39	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<50	<50	NA	14	<3	
MW-2	99.46	10/19/1993	48.43	51.03	NM	<0.5	<0.5	<0.5	<1	NA	NA	<50	<250	NA	54	<2	
MW-2	99.46	3/8/1994	49.24	50.22	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	6.6	<3	
MW-2	99.46	6/22/1994	47.00	52.46	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	<250	NA	NA	NA	
MW-2	99.46	9/23/1994	49.60	49.86	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-2	99.46	12/9/1994	49.73	49.73	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-2	99.46	3/1/1995	49.29	50.17	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-2	99.46	6/7/1995	48.98	50.48	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-2	99.46	8/28/1995	49.06	50.40	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-2	99.46	11/29/1995	49.12	50.34	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-2	99.46	3/6/1996	48.58	50.88	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-2	99.46	6/4/1996	48.04	51.42	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	<100	NA	NA	NA	NA	
MW-2	99.46	8/29/1996	48.00	51.46	NM	<0.5	<0.5	<0.5	<1.0	NA	NA	<100	NA	NA	NA	NA	
MW-2	99.46	12/5/1996	47.98	51.48	NM	<0.5	<0.5	<0.5	<1.0	NA	NA	<100	NA	NA	NA	NA	
MW-2	99.46	3/10/1997	47.06	52.40	NM	<0.5	<0.5	<0.5	<1.5	NA	NA	<100	NA	NA	NA	NA	
MW-2	99.46	5/27/1997	46.38	53.08	NM	<0.5	<0.5	<0.5	<1.5	NA	NA	<100	<250	NA	NA	NA	
MW-2	99.46	9/3/1997	46.55	52.91	NM	<0.5	<0.5	<0.5	<1.5	NA	NA	<100	<250	NA	NA	NA	
MW-2	99.46	12/10/2010	48.92	50.54	10.3	<0.50	<0.50	<0.50	<1.0	NA	NA	<50	NA	NA	5.2	<2.0	NP
MW-2	99.46	11/29/2011	48.16	51.30	NM	<1.0	<1.0	<1.0	<3.0	NA	NA	<50.0	<75	<380	<10.0	<10.0	NP

MTCA Method A Cleanup Levels

*1,000 ug/l if no detectable levels of Benzene in the sample - otherwise 800 ug/l.

TABLE 1
SUMMARY OF GROUNDWATER DATA
FORMER BP FACILITY NO. 11096
7601 LAKE BALLINGER WAY
EDMONDS, WASHINGTON

Well	TOC	Date Sampled	Depth to Water	GW Elevation	Dissolved Oxygen	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	1,2-Dibromoethane	1,2-Dichloroethane	TPH-G	TPH-D	TPH-O	Total Lead	Dissolved Lead	Comments
	(feet)		(feet)	(feet)	(mg/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	
MW-3	97.26	5/19/1993	47.24	50.02	NM	<0.5	<0.5	<0.5	<1	NA	NA	NA	<50	1,700	NA	9	5	
MW-3	97.26	8/16/1993	47.20	50.06	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	<50	<50	NA	18	<3	
MW-3	97.26	10/19/1993	48.02	49.24	NM	<0.5	<0.5	<0.5	<1	NA	NA	NA	<50	<250	NA	111	4.9	
MW-3	97.26	3/8/1994	46.92	50.34	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	<100	NA	NA	6.2	<3	
MW-3	97.26	6/22/1994	49.30	47.96	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	<100	<250	NA	NA	NA	
MW-3	97.26	9/23/1994	47.30	49.96	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	<100	NA	NA	NA	NA	
MW-3	97.26	12/9/1994	47.41	49.85	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	<100	NA	NA	NA	NA	
MW-3	97.26	3/1/1995	46.95	50.31	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	<100	NA	NA	NA	NA	
MW-3	97.26	6/7/1995	46.68	50.58	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	<100	NA	NA	NA	NA	
MW-3	97.26	8/28/1995	46.74	50.52	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	<100	NA	NA	NA	NA	
MW-3	97.26	11/29/1995	46.76	50.50	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	<100	NA	NA	NA	NA	
MW-3	97.26	3/6/1996	46.25	51.01	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	<100	NA	NA	NA	NA	
MW-3	97.26	6/4/1996	45.71	51.55	NM	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	<100	NA	NA	NA	NA	
MW-3	97.26	8/29/1996	45.70	51.56	NM	<0.5	<0.5	<0.5	<0.5	<1.0	NA	NA	<100	NA	NA	NA	NA	
MW-3	97.26	12/5/1996	45.62	51.64	NM	0.9	3.2	<0.5	2.7	<1.0	NA	NA	<100	NA	NA	NA	NA	
MW-3	97.26	3/10/1997	44.75	52.51	NM	<0.5	<0.5	<0.5	<1.5	<5	NA	NA	<100	NA	NA	NA	NA	
MW-3	97.26	5/27/1997	44.10	53.16	NM	<0.5	<0.5	<0.5	<1.5	<5	NA	NA	<100	<250	NA	NA	NA	
MW-3	97.26	9/3/1997	44.30	52.96	NM	<0.5	<0.5	<0.5	<1.5	<5	NA	NA	<100	<250	NA	NA	NA	
MW-3	97.26	12/10/2010	46.58	50.68	11.6	<0.50	<0.50	<0.50	<1.0	<1.0	NA	NA	<50	NA	NA	<2.0	<2.0	NP
MW-3	97.26	11/29/2011	45.88	51.38	NM	<1.0	<1.0	<1.0	<3.0	<1.0	NA	NA	<50.0	<76	<380	<10.0	<10.0	NP
MTCA Method A Cleanup Levels																		
						5.0	1,000	700	1,000	20	0.01	5	1,000/800*	500	500	15		

*1,000 ug/l if no detectable levels of Benzene in the sample - otherwise 800 ug/l.

Notes: Benzene, toluene, ethylbenzene, total xylenes, and methyl tert-butyl ether (MTBE) analyzed by EPA Method 8021B or EPA Method 8260B. Samples with MTBE detections above the laboratory method reporting limit using 8021B were re-analyzed using 8260B to confirm MTBE concentration.
 TPH-G = Gasoline-range hydrocarbons analyzed by the Northwest Method NWTPH-Gx.
 TPH-D = Diesel-range hydrocarbons analyzed by the Northwest Method NWTPH-Dx.
 TPH-O = Oil-range hydrocarbons analyzed by the Northwest Method NWTPH-Ox.
 1,2-Dibromoethane (EDB) analyzed by EPA Method 8011.
 1,2-Dichloromethane (EDC) analyzed by EPA Method 8260B.
 Total and dissolved lead analyzed by EPA Method 6020 or EPA Method 6010.

mg/L = milligrams per liter (ppm)

ug/L = micrograms per liter (ppb)

<1.00 = Concentrations were not detected above the method reporting limit.

NM = Not measured

NS = Not sampled

NA = Not analyzed

P = Purge sampling method was used

NP = Non-purge sampling method was used.

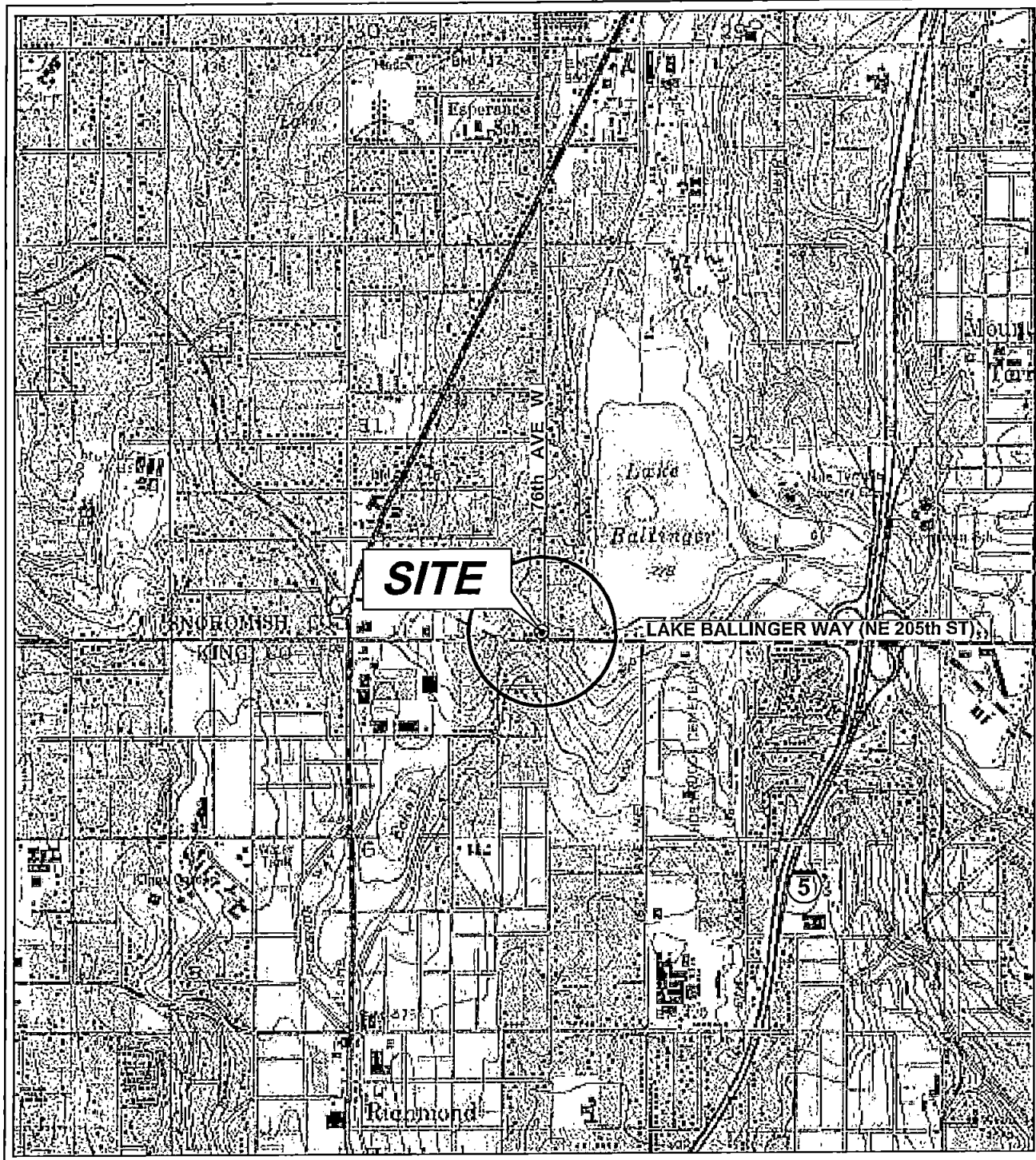
TOC = Top of Casing elevation relative to a site specific benchmark assigned an elevation of 100.00 geet established by Charles A. Gove & Associates, Inc.

Historical Data from 1993-1997 from Charles A. Gove & Associates, Inc.

GW Elevation = Groundwater elevation as calculated by TOC elevation - depth to water + (0.8 x LPH thickness)

Sample Frequency:

4Q11: MW-1, MW-2, MW-3



GENERAL NOTES:
 BASE MAP FROM TERRAIN NAVIGATOR PRO
 EDMONDS, WA. QUADRANGLE
 7.5 MINUTE TOPOGRAPHIC MAP
 1953
 PHOTOREVISED 1981



QUADRANGLE LOCATION

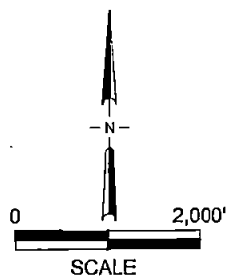


FIGURE 1

SITE LOCATION MAP
 FORMER BP FACILITY NO. 11096
 7601 LAKE BALLINGER WAY
 EDMONDS, WASHINGTON

PROJECT NO. 110960A101	DRAWN BY K. MARTIN
FILE NO. 11096-SLM	PREPARED BY M. MANIVONG
DATE 14 JAN 11	REV. 1 REVIEWED BY





GENERAL NOTES:
AERIAL PHOTOGRAPH
DATED 2008

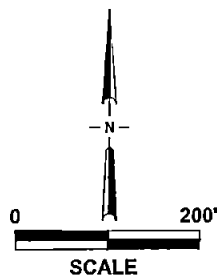


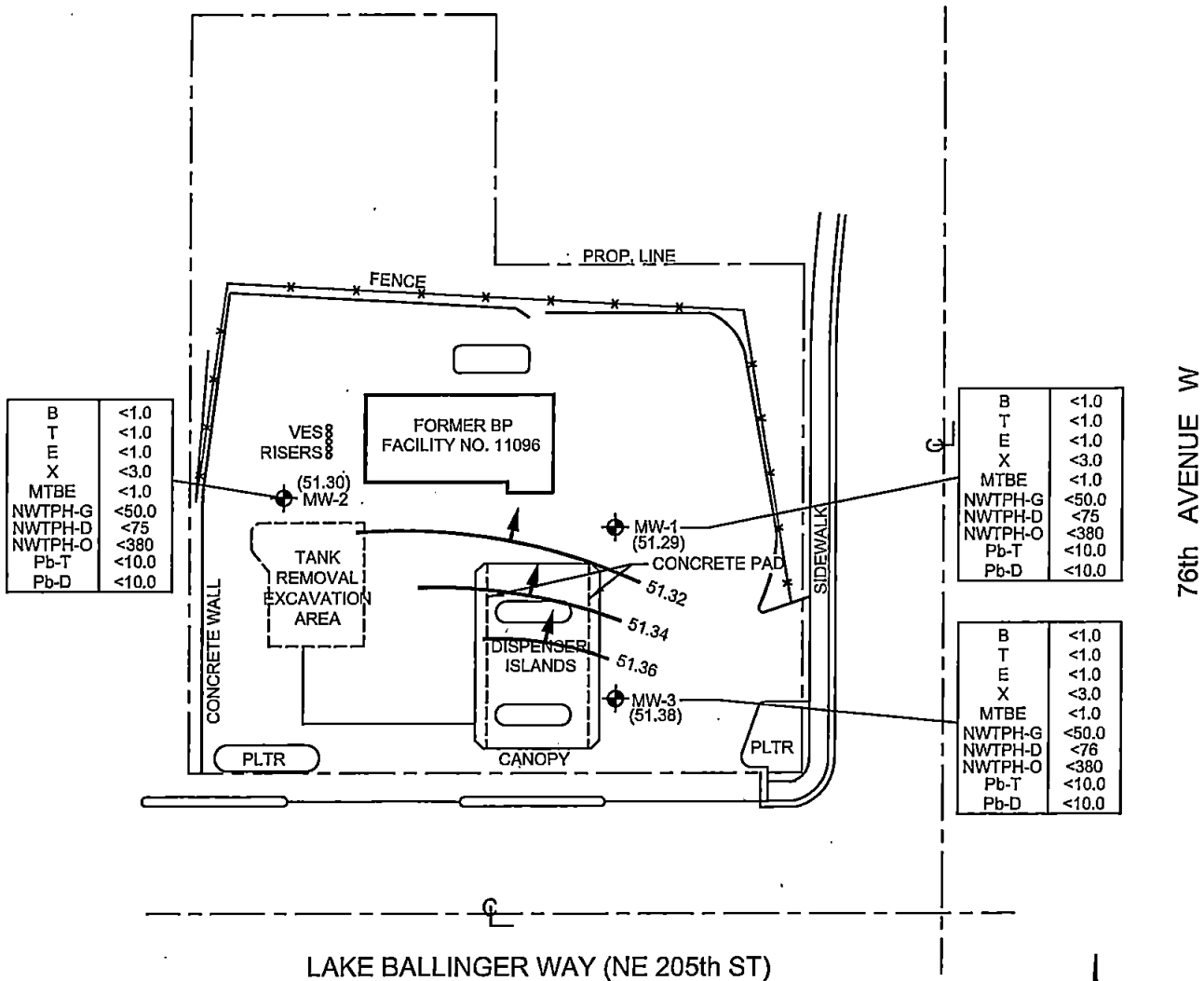
FIGURE 2

SITE AERIAL MAP

FORMER BP FACILITY NO. 11096
7601 LAKE BALLINGER WAY
EDMONDS, WASHINGTON

PROJECT NO. 11096OA101	DRAWN BY KYM 2/24/11
FILE NO. 11096-SAM	PREPARED BY MM
REVISION NO. 3	REVIEWED BY





LEGEND

- MW-3 GROUNDWATER MONITORING WELL LOCATION
- (51.29) GROUNDWATER ELEVATION IN FEET
RELATIVE TO A SITE SPECIAL BENCHMARK
- 51.36 — INFERRED WATER TABLE CONTOUR IN FEET
RELATIVE TO A SITE SPECIFIC BENCHMARK
(CONTOUR INTERVAL: 0.02 ft)
- ← INFERRED GROUNDWATER FLOW DIRECTION; N
(GROUNDWATER GRADIENT: <0.01 ft/linear ft)

GROUNDWATER DATA

B	<1.0	BENZENE IN MICROGRAMS PER LITER (ug/L)
T	<1.0	TOLUENE IN ug/L
E	<1.0	ETHYLBENZENE IN ug/L
X	<1.0	XYLENES IN ug/L
MTBE	<1.0	METHYL TERT BUTYL ETHER IN ug/L
NWTPH-G	<50.0	GASOLINE-RANGE HYDROCARBONS IN ug/L
NWTPH-D	<75	DIESEL-RANGE HYDROCARBONS IN ug/L
NWTPH-O	<380	OIL-RANGE HYDROCARBONS IN ug/L
Pb-T	<10.0	TOTAL LEAD IN ug/L
Pb-D	<10.0	DISSOLVED LEAD IN ug/L

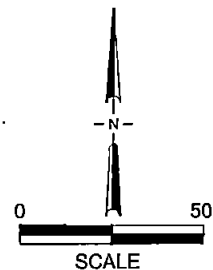


FIGURE 3
INFERRED WATER TABLE CONTOUR MAP
11/29/11

FORMER BP FACILITY NO. 11096
7601 LAKE BALLINGER WAY
EDMONDS, WASHINGTON

PROJECT NO. 110960A111	DRAWN BY K. MARTIN
FILE NO. BP-11096	PREPARED BY M. MANIVONG
DATE 12 JAN 12	REV. 0
LAYER 4Q11	





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

December 13, 2011

Markham Hurd
Antea Group WA
4006 148th Ave. NE
Redmond, WA 98052

RE: Project: BP 11096
Pace Project No.: 2510164

Dear Markham Hurd:

Enclosed are the analytical results for sample(s) received by the laboratory on November 29, 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 Ste. Marie

Regina SteMarie

regina.stemarie@pacelabs.com
Project Manager

Enclosures

cc: Colin Crawford, BP_Antea Group WA
Sarah Kennedy, BP_Antea Group WA
Mackie Manivong, Antea Group WA
Joannah Tornow, Antea Group WA



REPORT OF LABORATORY ANALYSIS

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Page 1 of 25



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

CERTIFICATIONS

Project: BP 11096

Pace Project No.: 2510164

Washington Certification IDs

940 South Harney Street, Seattle, WA 98108

Alaska CS Certification #: UST-025

Arizona Certification #: AZ0770

California Certification #: 01153CA

Florida/NELAP Certification #: E87617

Oregon Certification #: WA200007

Washington Certification #: C555

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: BP 11096
Pace Project No.: 2510164

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2510164001	MW-1-46.36	NWTPH-Dx	DMT	4	PASI-S
		EPA 6010	BGA	1	PASI-S
		EPA 6010	BGA	1	PASI-S
		EPA 5030B/8260	LNH	9	PASI-S
		NWTPH-Gx	LNH	2	PASI-S
2510164002	MW-2-48.16	NWTPH-Dx	DMT	4	PASI-S
		EPA 6010	BGA	1	PASI-S
		EPA 6010	BGA	1	PASI-S
		EPA 5030B/8260	ERB	9	PASI-S
		NWTPH-Gx	ERB	2	PASI-S
2510164003	MW-3-45.88	NWTPH-Dx	DMT	4	PASI-S
		EPA 6010	BGA	1	PASI-S
		EPA 6010	BGA	1	PASI-S
		EPA 5030B/8260	LNH	9	PASI-S
		NWTPH-Gx	CC	2	PASI-S

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BP 11096
Pace Project No.: 2510164

Method: NWTPH-Dx
Description: NWTPH-Dx GCS Silica Gel
Client: BP_Antea Group WA
Date: December 13, 2011

General Information:

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

Hold Time:

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

Sample Preparation:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

QC Batch: OEXT/4806

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 2510164002, 2510166003

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

- MS (Lab ID: 96051)
 - Diesel Range SG
 - Motor Oil Range SG
- MSD (Lab ID: 96053)
 - Diesel Range SG

Duplicate Sample:

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

QC Batch: OEXT/4806

R1: RPD value was outside control limits.

- DUP (Lab ID: 96052)
 - Motor Oil Range SG

REPORT OF LABORATORY ANALYSIS

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Seattle, WA 98108
(206)767-5060

PROJECT NARRATIVE

Project: BP 11096

Pace Project No.: 2510164

Method: NWTPH-Dx

Description: NWTPH-Dx GCS Silica Gel

Client: BP_Antea Group WA

Date: December 13, 2011

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BP 11096

Pace Project No.: 2510164

Method: EPA 6010

Description: 6010 MET ICP

Client: BP_Antea Group WA

Date: December 13, 2011

General Information:

3 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

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

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Duplicate Sample:

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

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BP 11096
Pace Project No.: 2510164

Method: EPA 6010
Description: 6010 MET ICP, Dissolved (LF)
Client: BP_Antea Group WA
Date: December 13, 2011

General Information:

3 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

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

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Duplicate Sample:

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

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BP 11096
Pace Project No.: 2510164

Method: EPA 5030B/8260
Description: 8260 MSV
Client: BP_Antea Group WA
Date: December 13, 2011

General Information:

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

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

QC Batch: MSV/5969

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 2510159001, 2510164002, 2510173001

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

- MS (Lab ID: 96127)
 - Ethylbenzene
 - Methyl-tert-butyl ether
 - Xylene (Total)
- MSD (Lab ID: 96128)
 - Ethylbenzene
 - Methyl-tert-butyl ether
 - Toluene
 - Xylene (Total)

Duplicate Sample:

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

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BP 11096

Pace Project No.: 2510164

Method: NWTPH-Gx

Description: NWTPH-Gx MSV

Client: BP_Antea Group WA

Date: December 13, 2011

General Information:

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

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

QC Batch: MSV/5978

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 2510186001, 2510186003

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

- MS (Lab ID: 96501)
 - Gasoline Range Organics
- MSD (Lab ID: 96502)
 - Gasoline Range Organics

Duplicate Sample:

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

Additional Comments:

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

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ANALYTICAL RESULTS

Project: BP 11096

Pace Project No.: 2510164

Sample: MW-1-46.36		Lab ID: 2510164001	Collected: 11/29/11 13:15		Received: 11/29/11 14:20		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	ND	mg/L	0.075	1	12/02/11 11:50	12/02/11 21:08		
Motor Oil Range SG	ND	mg/L	0.38	1	12/02/11 11:50	12/02/11 21:08	64742-65-0	
Surrogates								
n-Octacosane (S) SG	130	%	50-150	1	12/02/11 11:50	12/02/11 21:08	630-02-4	
o-Terphenyl (S) SG	110	%	50-150	1	12/02/11 11:50	12/02/11 21:08	84-15-1	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Lead	ND	ug/L	10.0	1	12/05/11 09:58	12/06/11 15:45	7439-92-1	
6010 MET ICP, Dissolved (LF)		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Lead, Dissolved	ND	ug/L	10.0	1	12/05/11 09:58	12/07/11 15:13	7439-92-1	
8260 MSV		Analytical Method: EPA 5030B/8260						
Benzene	ND	ug/L	1.0	1		12/06/11 19:42	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		12/06/11 19:42	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/06/11 19:42	1634-04-4	
Toluene	ND	ug/L	1.0	1		12/06/11 19:42	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		12/06/11 19:42	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	112	%	79-121	1		12/06/11 19:42	460-00-4	
Dibromofluoromethane (S)	97	%	81-119	1		12/06/11 19:42	1868-53-7	
1,2-Dichloroethane-d4 (S)	85	%	72-127	1		12/06/11 19:42	17060-07-0	
Toluene-d8 (S)	106	%	77-120	1		12/06/11 19:42	2037-26-5	
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx						
Gasoline Range Organics	ND	ug/L	50.0	1		12/06/11 19:42		
Surrogates								
4-Bromofluorobenzene (S)	112	%	50-150	1		12/06/11 19:42	460-00-4	

Sample: MW-2-48.16		Lab ID: 2510164002	Collected: 11/29/11 12:30		Received: 11/29/11 14:20		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	ND	mg/L	0.075	1	12/02/11 11:50	12/02/11 21:33		
Motor Oil Range SG	ND	mg/L	0.38	1	12/02/11 11:50	12/02/11 21:33	64742-65-0	
Surrogates								
n-Octacosane (S) SG	108	%	50-150	1	12/02/11 11:50	12/02/11 21:33	630-02-4	
o-Terphenyl (S) SG	93	%	50-150	1	12/02/11 11:50	12/02/11 21:33	84-15-1	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Lead	ND	ug/L	10.0	1	12/05/11 09:58	12/06/11 15:49	7439-92-1	
6010 MET ICP, Dissolved (LF)		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Lead, Dissolved	ND	ug/L	10.0	1	12/05/11 09:58	12/07/11 15:17	7439-92-1	

Date: 12/13/2011 03:52 PM

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ANALYTICAL RESULTS

Project: BP 11096

Pace Project No.: 2510164

Sample: MW-2-48.16		Lab ID: 2510164002		Collected: 11/29/11 12:30		Received: 11/29/11 14:20		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV		Analytical Method: EPA 5030B/8260							
Benzene	ND ug/L		1.0	1		12/03/11 00:16	71-43-2		
Ethylbenzene	ND ug/L		1.0	1		12/03/11 00:16	100-41-4		
Methyl-tert-butyl ether	ND ug/L		1.0	1		12/03/11 00:16	1634-04-4		
Toluene	ND ug/L		1.0	1		12/03/11 00:16	108-88-3		
Xylene (Total)	ND ug/L		3.0	1		12/03/11 00:16	1330-20-7		
Surrogates									
4-Bromofluorobenzene (S)	109 %		79-121	1		12/03/11 00:16	460-00-4		
Dibromofluoromethane (S)	98 %		81-119	1		12/03/11 00:16	1868-53-7		
1,2-Dichloroethane-d4 (S)	89 %		72-127	1		12/03/11 00:16	17060-07-0		
Toluene-d8 (S)	102 %		77-120	1		12/03/11 00:16	2037-26-5		
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx							
Gasoline Range Organics	ND ug/L		50.0	1		12/03/11 00:16			
Surrogates									
4-Bromofluorobenzene (S)	109 %		50-150	1		12/03/11 00:16	460-00-4		

Sample: MW-3-45.88		Lab ID: 2510164003	Collected: 11/29/11 13:45		Received: 11/29/11 14:20		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	ND	mg/L	0.076	1	12/02/11 11:50	12/02/11 23:36		
Motor Oil Range SG	ND	mg/L	0.38	1	12/02/11 11:50	12/02/11 23:36	64742-65-0	
Surrogates								
n-Octacosane (S) SG	106	%	50-150	1	12/02/11 11:50	12/02/11 23:36	630-02-4	
o-Terphenyl (S) SG	90	%	50-150	1	12/02/11 11:50	12/02/11 23:36	84-15-1	
6010 MET ICP								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	ND	ug/L	10.0	1	12/05/11 09:58	12/06/11 16:06	7439-92-1	
6010 MET ICP, Dissolved (LF)								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead, Dissolved	ND	ug/L	10.0	1	12/05/11 09:58	12/07/11 15:35	7439-92-1	
8260 MSV								
Analytical Method: EPA 5030B/8260								
Benzene	ND	ug/L	1.0	1		12/06/11 19:58	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		12/06/11 19:58	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/06/11 19:58	1634-04-4	
Toluene	ND	ug/L	1.0	1		12/06/11 19:58	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		12/06/11 19:58	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	113	%	79-121	1		12/06/11 19:58	460-00-4	
Dibromofluoromethane (S)	98	%	81-119	1		12/06/11 19:58	1868-53-7	
1,2-Dichloroethane-d4 (S)	85	%	72-127	1		12/06/11 19:58	17060-07-0	
Toluene-d8 (S)	103	%	77-120	1		12/06/11 19:58	2037-26-5	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BP 11096

Pace Project No.: 2510164

Sample: MW-3-45.88		Lab ID: 2510164003	Collected: 11/29/11 13:45		Received: 11/29/11 14:20		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx						
Gasoline Range Organics	ND ug/L		50.0	1		12/13/11 03:35		
Surrogates								
4-Bromofluorobenzene (S)	95 %		50-150	1		12/13/11 03:35	460-00-4	



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QUALITY CONTROL DATA

Project: BP 11096
Pace Project No.: 2510164

QC Batch: MPRP/2673 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 2510164001, 2510164002, 2510164003

METHOD BLANK: 96208 Matrix: Water
Associated Lab Samples: 2510164001, 2510164002, 2510164003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	ug/L	ND	10.0	12/06/11 14:59	

LABORATORY CONTROL SAMPLE: 96209

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	500	527	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96210 96211

Parameter	Units	2510159001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Lead	ug/L	ND	500	500	533	508	107	102	75-125	5	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96212 96213

Parameter	Units	2510164002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Lead	ug/L	ND	500	500	542	545	108	109	75-125	.6	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96214 96215

Parameter	Units	2510173001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Lead	ug/L	ND	500	500	533	530	106	105	75-125	.6	



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QUALITY CONTROL DATA

Project: BP 11096
Pace Project No.: 2510164

QC Batch: MPRP/2674 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 2510164001, 2510164002, 2510164003

METHOD BLANK: 96216 Matrix: Water

Associated Lab Samples: 2510164001, 2510164002, 2510164003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead, Dissolved	ug/L	ND	10.0	12/07/11 14:27	

LABORATORY CONTROL SAMPLE: 96217

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead, Dissolved	ug/L	500	491	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96218 96219

Parameter	Units	2510159001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Lead, Dissolved	ug/L	ND	500	500	492	520	98	104	75-125	6	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96220 96221

Parameter	Units	2510164002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Lead, Dissolved	ug/L	ND	500	500	490	518	98	104	75-125	6	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96222 96223

Parameter	Units	2510173001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Lead, Dissolved	ug/L	ND	500	500	502	505	100	101	75-125	.5	

QUALITY CONTROL DATA

Project: BP 11096

Pace Project No.: 2510164

QC Batch: MSV/5969	Analysis Method: EPA 5030B/8260
QC Batch Method: EPA 5030B/8260	Analysis Description: 8260 MSV Water 10 mL Purge
Associated Lab Samples: 2510164002	

METHOD BLANK: 96123

Matrix: Water

Associated Lab Samples: 2510164002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	12/02/11 23:42	
Ethylbenzene	ug/L	ND	1.0	12/02/11 23:42	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/02/11 23:42	
Toluene	ug/L	ND	1.0	12/02/11 23:42	
Xylene (Total)	ug/L	ND	3.0	12/02/11 23:42	
1,2-Dichloroethane-d4 (S)	%	91	72-127	12/02/11 23:42	
4-Bromofluorobenzene (S)	%	108	79-121	12/02/11 23:42	
Dibromofluoromethane (S)	%	96	81-119	12/02/11 23:42	
Toluene-d8 (S)	%	103	77-120	12/02/11 23:42	

LABORATORY CONTROL SAMPLE: 96124

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	17.9	90	66-123	
Ethylbenzene	ug/L	20	18.1	90	67-122	
Methyl-tert-butyl ether	ug/L	20	16.9	84	65-138	
Toluene	ug/L	20	18.1	91	64-118	
Xylene (Total)	ug/L	60	55.7	93	68-122	
1,2-Dichloroethane-d4 (S)	%			88	72-127	
4-Bromofluorobenzene (S)	%			102	79-121	
Dibromofluoromethane (S)	%			96	81-119	
Toluene-d8 (S)	%			104	77-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96127 96128

Parameter	Units	2510159001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/L	ND	20	20	12.8	12.6	64	63	63-138	2	
Ethylbenzene	ug/L	ND	20	20	12.9	12.3	64	62	65-135	4 M1	
Methyl-tert-butyl ether	ug/L	ND	20	20	11.5	11.4	58	57	59-143	1 M1	
Toluene	ug/L	ND	20	20	12.8	12.6	64	63	64-128	2 M1	
Xylene (Total)	ug/L	ND	60	60	38.4	37.2	64	62	65-133	3 M1	
1,2-Dichloroethane-d4 (S)	%						89	89	72-127		
4-Bromofluorobenzene (S)	%						102	101	79-121		
Dibromofluoromethane (S)	%						98	98	81-119		
Toluene-d8 (S)	%						104	104	77-120		

QUALITY CONTROL DATA

Project: BP 11096
Pace Project No.: 2510164

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96129											
96130											
Parameter	Units	2510164002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/L	ND	20	20	16.7	17.6	84	88	63-138	5	
Ethylbenzene	ug/L	ND	20	20	16.6	17.5	83	88	65-135	5	
Methyl-tert-butyl ether	ug/L	ND	20	20	15.1	15.8	76	79	59-143	4	
Toluene	ug/L	ND	20	20	16.7	17.4	84	87	64-128	4	
Xylene (Total)	ug/L	ND	60	60	50.1	52.9	83	88	65-133	5	
1,2-Dichloroethane-d4 (S)	%						90	92	72-127		
4-Bromofluorobenzene (S)	%						102	102	79-121		
Dibromofluoromethane (S)	%						98	98	81-119		
Toluene-d8 (S)	%						103	103	77-120		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96131											
96132											
Parameter	Units	2510173001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/L	ND	20	20	19.8	20.2	99	101	63-138	2	
Ethylbenzene	ug/L	ND	20	20	19.9	20.1	99	101	65-135	1	
Methyl-tert-butyl ether	ug/L	1.4	20	20	20.7	21.2	96	99	59-143	3	
Toluene	ug/L	ND	20	20	19.5	20.0	98	100	64-128	2	
Xylene (Total)	ug/L	ND	60	60	59.6	60.4	99	101	65-133	1	
1,2-Dichloroethane-d4 (S)	%						90	90	72-127		
4-Bromofluorobenzene (S)	%						102	101	79-121		
Dibromofluoromethane (S)	%						98	97	81-119		
Toluene-d8 (S)	%						103	104	77-120		

QUALITY CONTROL DATA

Project: BP 11096

Pace Project No.: 2510164

QC Batch: MSV/5977

Analysis Method: EPA 5030B/8260

QC Batch Method: EPA 5030B/8260

Analysis Description: 8260 MSV Water 10 mL Purge

Associated Lab Samples: 2510164001, 2510164003

METHOD BLANK: 96374

Matrix: Water

Associated Lab Samples: 2510164001, 2510164003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	12/06/11 18:01	
Ethylbenzene	ug/L	ND	1.0	12/06/11 18:01	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/06/11 18:01	
Toluene	ug/L	ND	1.0	12/06/11 18:01	
Xylene (Total)	ug/L	ND	3.0	12/06/11 18:01	
1,2-Dichloroethane-d4 (S)	%	90	72-127	12/06/11 18:01	
4-Bromofluorobenzene (S)	%	113	79-121	12/06/11 18:01	
Dibromofluoromethane (S)	%	98	81-119	12/06/11 18:01	
Toluene-d8 (S)	%	104	77-120	12/06/11 18:01	

LABORATORY CONTROL SAMPLE: 96375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	17.1	85	66-123	
Ethylbenzene	ug/L	20	16.9	85	67-122	
Methyl-tert-butyl ether	ug/L	20	16.1	80	65-138	
Toluene	ug/L	20	16.7	84	64-118	
Xylene (Total)	ug/L	60	51.4	86	68-122	
1,2-Dichloroethane-d4 (S)	%			89	72-127	
4-Bromofluorobenzene (S)	%			101	79-121	
Dibromofluoromethane (S)	%			98	81-119	
Toluene-d8 (S)	%			103	77-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96376

96377

Parameter	Units	2510186001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/L	ND	20	20	16.4	18.4	82	92	63-138	12	
Ethylbenzene	ug/L	ND	20	20	17.0	18.7	85	93	65-135	10	
Methyl-tert-butyl ether	ug/L	ND	20	20	13.0	15.8	65	79	59-143	19	
Toluene	ug/L	ND	20	20	16.6	18.2	83	91	64-128	9	
Xylene (Total)	ug/L	ND	60	60	50.4	56.3	84	94	65-133	11	
1,2-Dichloroethane-d4 (S)	%						80	88	72-127		
4-Bromofluorobenzene (S)	%						105	104	79-121		
Dibromofluoromethane (S)	%						96	98	81-119		
Toluene-d8 (S)	%						105	104	77-120		

QUALITY CONTROL DATA

Project: BP 11096

Pace Project No.: 2510164

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96378 96379											
Parameter	Units	2510186003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/L	ND	20	20	19.5	20.0	96	99	63-138	3	
Ethylbenzene	ug/L	5.5	20	20	25.6	26.1	100	103	65-135	2	
Methyl-tert-butyl ether	ug/L	ND	20	20	17.2	18.8	86	94	59-143	9	
Toluene	ug/L	ND	20	20	19.8	20.2	96	98	64-128	2	
Xylene (Total)	ug/L	5.3	60	60	65.0	66.3	99	102	65-133	2	
1,2-Dichloroethane-d4 (S)	%						87	87	72-127		
4-Bromofluorobenzene (S)	%						100	100	79-121		
Dibromofluoromethane (S)	%						98	98	81-119		
Toluene-d8 (S)	%						103	102	77-120		



QUALITY CONTROL DATA

Project: BP 11096

Pace Project No.: 2510164

QC Batch: MSV/5970

Analysis Method: NWTPH-Gx

QC Batch Method: NWTPH-Gx

Analysis Description: NWTPH-Gx MSV Water

Associated Lab Samples: 2510164002

METHOD BLANK: 96255

Matrix: Water

Associated Lab Samples: 2510164002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	ug/L	ND	50.0	12/02/11 23:42	
4-Bromofluorobenzene (S)	%	108	50-150	12/02/11 23:42	

LABORATORY CONTROL SAMPLE: 96256

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	ug/L	500	515	103	65-139	
4-Bromofluorobenzene (S)	%			104	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96257

96258

Parameter	Units	2510159001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	ug/L	ND	500	500	514	550	102	110	48-147	7	
4-Bromofluorobenzene (S)	%						104	106	50-150		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96259

96260

Parameter	Units	2510164002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	ug/L	ND	500	500	555	558	111	111	48-147	.6	
4-Bromofluorobenzene (S)	%						106	105	50-150		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96261

96262

Parameter	Units	2510173001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	ug/L	ND	500	500	554	562	110	112	48-147	1	
4-Bromofluorobenzene (S)	%						105	104	50-150		

QUALITY CONTROL DATA

Project: BP 11096

Pace Project No.: 2510164

QC Batch: MSV/5978	Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx	Analysis Description: NWTPH-Gx MSV Water
Associated Lab Samples: 2510164001	

METHOD BLANK: 96391 Matrix: Water

Associated Lab Samples: 2510164001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	ug/L	ND	50.0	12/06/11 17:44	
4-Bromofluorobenzene (S)	%	112	50-150	12/06/11 17:44	

LABORATORY CONTROL SAMPLE: 96392

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	ug/L	500	473	95	65-139	
4-Bromofluorobenzene (S)	%			108	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96393 96394

Parameter	Units	2510186001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	ug/L	ND	500	500	577	566	115	113	48-147	2	
4-Bromofluorobenzene (S)	%						109	106	50-150		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96501 96502

Parameter	Units	2510186003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	ug/L	3100	500	500	4050	3980	189	177	48-147	2 M1	
4-Bromofluorobenzene (S)	%						102	102	50-150		

QUALITY CONTROL DATA

Project: BP 11096

Pace Project No.: 2510164

QC Batch: MSV/6015

Analysis Method: NWTPH-Gx

QC Batch Method: NWTPH-Gx

Analysis Description: NWTPH-Gx MSV Water

Associated Lab Samples: 2510164003

METHOD BLANK: 97069

Matrix: Water

Associated Lab Samples: 2510164003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	ug/L	ND	50.0	12/12/11 23:22	
4-Bromofluorobenzene (S)	%	96	50-150	12/12/11 23:22	

LABORATORY CONTROL SAMPLE: 97070

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	ug/L	500	561	112	65-139	
4-Bromofluorobenzene (S)	%			95	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 97071

97072

Parameter	Units	2510213004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	ug/L	ND	500	500	595	628	117	124	48-147	5	
4-Bromofluorobenzene (S)	%						94	95	50-150		

QUALITY CONTROL DATA

Project: BP 11096

Pace Project No.: 2510164

QC Batch: OEXT/4806

Analysis Method: NWTPH-Dx

QC Batch Method: EPA 3510

Analysis Description: NWTPH-Dx GCS SG

Associated Lab Samples: 2510164001, 2510164002, 2510164003

METHOD BLANK: 96047

Matrix: Water

Associated Lab Samples: 2510164001, 2510164002, 2510164003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range SG	mg/L	ND	0.080	12/02/11 20:18	
Motor Oil Range SG	mg/L	ND	0.40	12/02/11 20:18	
n-Octacosane (S) SG	%	103	50-150	12/02/11 20:18	
o-Terphenyl (S) SG	%	87	50-150	12/02/11 20:18	

LABORATORY CONTROL SAMPLE: 96048

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Range SG	mg/L	4	3.8	94	59-114	
Motor Oil Range SG	mg/L	4	3.9	98	69-124	
n-Octacosane (S) SG	%			106	50-150	
o-Terphenyl (S) SG	%			98	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96049

96050

Parameter	Units	2510164002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Diesel Range SG	mg/L	ND	3.8	3.8	3.3	3.4	87	89	56-112	2	
Motor Oil Range SG	mg/L	ND	3.8	3.8	3.6	3.6	94	96	72-119	2	
n-Octacosane (S) SG	%						105	107	50-150		
o-Terphenyl (S) SG	%						96	97	50-150		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 96051

96053

Parameter	Units	2510166003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Diesel Range SG	mg/L	56.2	4	4	31.4	34.5	-621	-549	56-112	9 M1	
Motor Oil Range SG	mg/L	1.4	4	4	4.0	4.9	65	88	72-119	19 M1	
n-Octacosane (S) SG	%						79	104	50-150		
o-Terphenyl (S) SG	%						83	103	50-150		

SAMPLE DUPLICATE: 96052

Parameter	Units	2510166003 Result	Dup Result	RPD	Qualifiers
Diesel Range SG	mg/L	56.2	67.8	19	
Motor Oil Range SG	mg/L	1.4	2.3	51 R1	
n-Octacosane (S) SG	%	85	106	17	

Date: 12/13/2011 03:52 PM

REPORT OF LABORATORY ANALYSIS

Page 22 of 25

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

QUALITY CONTROL DATA

Project: BP 11096

Pace Project No.: 2510164

SAMPLE DUPLICATE: 96052

Parameter	Units	2510166003 Result	Dup Result	RPD	Qualifiers
o-Terphenyl (S) SG	%	93	92	6	

QUALIFIERS

Project: BP 11096
Pace Project No.: 2510164

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.

R1 RPD value was outside control limits.



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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BP 11096

Pace Project No.: 2510164

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2510164001	MW-1-46.36	EPA 3510	OEXT/4806	NWTPH-Dx	GCSV/3137
2510164002	MW-2-48.16	EPA 3510	OEXT/4806	NWTPH-Dx	GCSV/3137
2510164003	MW-3-45.88	EPA 3510	OEXT/4806	NWTPH-Dx	GCSV/3137
2510164001	MW-1-46.36	EPA 3010	MPRP/2673	EPA 6010	ICP/2532
2510164002	MW-2-48.16	EPA 3010	MPRP/2673	EPA 6010	ICP/2532
2510164003	MW-3-45.88	EPA 3010	MPRP/2673	EPA 6010	ICP/2532
2510164001	MW-1-46.36	EPA 3010	MPRP/2674	EPA 6010	ICP/2533
2510164002	MW-2-48.16	EPA 3010	MPRP/2674	EPA 6010	ICP/2533
2510164003	MW-3-45.88	EPA 3010	MPRP/2674	EPA 6010	ICP/2533
2510164001	MW-1-46.36	EPA 5030B/8260	MSV/5977		
2510164002	MW-2-48.16	EPA 5030B/8260	MSV/5969		
2510164003	MW-3-45.88	EPA 5030B/8260	MSV/5977		
2510164001	MW-1-46.36	NWTPH-Gx	MSV/5978		
2510164002	MW-2-48.16	NWTPH-Gx	MSV/5970		
2510164003	MW-3-45.88	NWTPH-Gx	MSV/6015		

BP/ARC Project Name: **BP 11096**

Req Due Date (mm/dd/yy): **Standard TAT** Rush TAT: Yes ☐ No ☐

BP/ARC Facility No: **BP 11096**

Lab Work Order Number: _____

Lab Name: Pace Analytical				BP/ARC Facility Address: 7601 Lake Ballinger Way				Consultant/Contractor: Antea Group															
Lab Address: 940 S. Harney St				City, State, ZIP Code: Edmonds, WA				Consultant/Contractor Project No: 11096EAUA															
Lab PM: Regina Ste. Marie				Lead Regulatory Agency: Washington State Department of Ecology				Address: 4006 148th Ave NE, Redmond, WA 98052															
Lab Phone: 206-957-2427				California Global ID No.: NA				Consultant/Contractor PM: Markham Hurd															
Lab Shipping Acct: _____				Enfos Proposal No: _____				Phone: (206) 679-8074															
Lab Bottle Order No: _____				Accounting Mode: Provision ☒ OOC-BU ☐ OOC-RM ☐				Email EDD To: markham.hurd@anteagroup.com															
Other Info: _____				Stage: Execute Activity: Project Spend				Invoice To: BP/ARC: ☒ Contractor: ☐															
BP/ARC EBM: Paul Supple				Matrix		No. Containers / Preservative		Requested Analyses				Report Type & QC Level											
EBM Phone: (925) 275-3801												Standard ☒ w/ Access											
EBM Email: Paul.Supple@bp.com												Full Data Package ☐											
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Na ₂ S ₂ O ₃	BTEX by EPA 8024b	MTBE by EPA 8024b	NWTPH-Gx	NWTPH-D w/ silica gel	NWTPH-O w/ silica gel	Pb-T by EPA 6020	Pb-D by EPA 6020	EDB by EPA 8011	EDC by EPA 8260B	Comments	
	MW-1	11-29-11	13:15	X			9	1		1	7		X	X	X	X	X	X	X				
	MW-2	↓	12:30	X			17	1		1	15		X	X	X	X	X	X	X				MS/MSD
	MW-3	↓	13:45	X			9	1		1	7		X	X	X	X	X	X	X				
	TB	—	—	X									X										Hold Pending Analysis
Sampler's Name: Don Rowlands				Relinquished By / Affiliation: Don Rowlands ANTEA				Date: 11-29-11	Time: 14:20	Accepted By / Affiliation: Brian K. Pacer				Date: 11/29/11	Time: 14:20								
Sampler's Company: Antea Group				Shipment Method: _____ 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: **4.3** °F/C ☒ Trip Blank: Yes ☐ No ☒ MS/MSD Sample Submitted: Yes ☒ No ☐

Sample Container Count

2510164



CLIENT: Antea

COC PAGE 1 of 1

COC ID# _____

Trip Blank(s) Provided?

(Y) / N

Sample Line Item	VG9H	AG1H	AG1U	BP1U	BP2U	BP3U	BP3N	BP3S	WGKU	WGFU	WG2U	DG9M	DG9B	VG9W	VSG	Comments
1	6	1 ²²				1	1 ²²									
2	12	31				↓	↓									
3	6	1↓				↓	↓									
4	6															
5																
6																
7																
8																
9																
10																
11																
12																

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



Sample Condition Upon Receipt

2510164

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 ☐ NoPacking Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other Temp. Blank Yes ☒ NoThermometer Used 132013 or 101731962 or 226099 Type of Ice: Wal Blue None ☐ Samples on ice, cooling process has begunCooler Temperature 4.3c

Biological Tissue Is Frozen: Yes No

Date and Initials of person examining contents: 11/29/11 CWTemp should be above freezing $\pm 6^{\circ}\text{C}$

Comments:

Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time:	☒ Yes ☐ No ☐ N/A	5.
Short Hold Time Analysis (<72hr):	☐ Yes ☒ No ☐ N/A	6.
Rush Turn Around Time Requested:	☐ Yes ☒ No ☐ N/A	7.
Follow Up / Hold Analysis Requested:	☒ Yes ☐ No ☐ N/A	8. Trip blank on hold pending analysis
Sufficient Volume:	☒ Yes ☐ No ☐ N/A	9.
Correct Containers Used:	☒ Yes ☐ No ☐ N/A	10.
-Pace Containers Used:	☒ Yes ☐ No ☐ N/A	
Containers Intact:	☒ Yes ☐ No ☐ N/A	11.
Filtered volume received for Dissolved tests	☒ Yes ☐ No ☐ N/A	12. to be lab filtered
Sample Labels match COC:	☒ Yes ☐ No ☐ N/A	13. Coa says MW-1, MW-2, & MW-3 but containers says MW-1-46.34, MW-2-48.14, & MW-3-45.88
-Includes date/time/ID/Analysis Matrix:	<u>WT</u>	
All containers needing preservation have been checked.	☒ Yes ☐ No ☐ N/A	14.
All containers needing preservation are found to be in compliance with EPA recommendation.	☒ Yes ☐ No ☐ N/A	
Exceptions: VOA, confirm, TOC, O&G		Initial when completed
Samples checked for dechlorination:	☐ Yes ☐ No ☒ N/A	15.
Headspace in VOA Vials (>6mm):	☒ Yes ☐ No ☐ N/A	16. 1 vial for MW-3
Trip Blanks Present:	☐ Yes ☐ No ☐ N/A	17.
Trip Blank Custody Seals Present	☐ Yes ☐ No ☐ N/A	
Pace Trip Blank Creation Date:		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: M. ManivongDate/Time: 11/30/11 09:01

Comments/ Resolution:

Per client: Use IDs from containers. rsm
Client approved use of method 16310 for Pb analysis. rsm

Project Manager Review:

RSMDate: 11/30/11

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)



PROJECT NUMBER:

11096

CLIENT:

BF

SITE No./JOB No.:

PAGE

) of)

SITE ADDRESS/LOCATION: 7601 Lake Ballinger Way, Edmonds

DATE:

11-29-11

FIELD PERSONNEL:

DR

WEATHER:

40°

1-612+3

System Instructions:

Purge Water Disposal Method:

N/A - Non PURGE

- | | | |
|--------------------------|---|--------------------------|
| ☐ | Treated through mobile carbon treatment unit and discharged on-site | |
| ☐ | Placed in drums on site | No. of drums: _____ |
| ☐ | Transported off-site for treatment | Facility/Location: _____ |

No. of drums:

Facility/Location:

Measuring Device(s):