TERRA ASSOCIATES, Inc.

Consultants in Geotechnical Engineering, Geology
and
Environmental Earth Sciences

May 3, 2012
Project No. T-6552

HALCO PROPERTIES, LLC
Mr. Brett Cowman
c/o Mr. Livingston Wernecke
Betts, Patterson & Mines, P.S.
701 Pike Street, Suite 1400
Seattle, Washington 98101-3927

Subject: Technical Memo – Project Progress
5221 Ballard Avenue NW
Seattle, Washington
VCP NW 2496

References:

1. Phase II Environmental Site Assessment, prepared by Terra Associates, Inc., dated July 29, 2011
2. Technical Memo, Fall Quarter Sampling, prepared by Terra Associates, Inc., dated October 12, 2011
3. Technical Memo, prepared by Terra Associates, Inc., dated December 1, 2011

Dear Mr. Cowman:

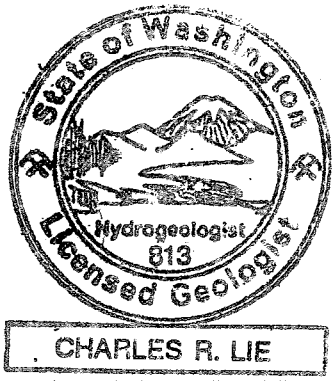
This memo updates the progress at the 5221 Ballard Avenue NW project. The attached memo presents the results of analytical testing subsequent to the memo dated December 1, 2011 and our current conclusions in more detail.

We trust the information presented is sufficient for your current needs. If you have any questions or require additional information, please call.

Respectfully submitted,
TERRA ASSOCIATES, INC.

Charles R. Lie, L.H.G.
Project Manager

cc: Ms. Audrey Heisey, NWRO WDOE



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Technical Memo – Project Progress
5221 Ballard Avenue NW
Seattle, Washington
VCP NW 2496

1.0 EXECUTIVE SUMMARY

This memo summarizes the current status of the project at the parcel at 5221 Ballard Avenue NW in Seattle, Washington. We previously prepared a memo dated December 1, 2012. Subsequent to our prior memo, a pilot Vacuum Extraction System (VES) test was performed, a response letter from Ecology dated February 12, 2012 has been received and a production VES has been installed and is operating on the site. The current status summarized in more detail in the following sections of this memo.

2.0 SCOPE OF WORK

Our scope of work for this supplemental report consisted of the following:

- Measuring groundwater in all of the accessible monitoring wells on this site and the adjacent site along Shilshole Avenue NW.
- Measurements of vacuums, air flow rates, and vacuum discharge concentrations in a pilot VES test.
- Subcontracting analytical testing of vapor samples.
- Appropriate analysis of the data.
- Review of the Ecology letter dated February 12, 2012.
- The layout of a production VES system.
- Monitoring the startup of the VES system.
- Preparation of this memo.

3.0 SITE CONDITIONS

3.1 Surface

The site is located at 5221 Ballard Avenue NW in Seattle, Washington. The site location is shown on Figures 1 and 2. The adjacent construction site is shown on Figure 2. The site layout is shown on Figure 3.

Adjacent New Construction Project

The construction project at 5214 Ballard Avenue NW involves the construction of a 4-story mixed-use building with 3 levels of underground parking. With a surface elevation of about Elev. 36, this places the lower parking level at about Elev. 6. From a conversation with the personnel at the construction project, we understand that the dewatering well point is set at about Elev. 2 and that the dewatering pump will run full-time during and following construction.

On-site UST Distribution System

Prior to proceeding with the VES pilot test, the existing distribution system was evaluated to reduce impacts such as short circuiting through pipes or pipe bedding. Each of the USTs had a turbine pump. The USTs were vented to the west elevation of the building on-site. The distribution pipes extended from the turbine pump vaults at each UST towards the south. The distribution pipes penetrated the northern basement wall of the building at 5242 Shilshole Avenue NW and extend above grade to former paint formulation stations. No underground distribution system is believed to exist on the property at 5242 Shilshole Avenue NW.

Since the USTs were not used for the storage of vehicle fuel, there were no pump islands associated with the USTs.

3.2 Groundwater

Table 1 summarizes the current and previous groundwater measurements. The current groundwater gradient is currently towards the north-east, inconsistent with the previous measurements. The gradient has reversed due to active dewatering at a new construction project northeast of the site as discussed in Section 3.1. As can be seen in the summary below, the static water levels in the wells on and adjacent to the site are all below the bottom of the existing monitoring well network.

Table 1
Groundwater Measurements

Monitoring Well	Surface Elev.	MP Elev.	5/6/11		5/10/2011		6/29/2011		9/29/11	
			Depth	Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.
MW-101	36.77	36.37	10.3	26.07	10.45	25.92	10.78	25.59	11.63	24.74
MW-102	36.35	35.93	10.25	25.68	9.81	26.12	10.08	25.85	11	24.93
MW-103	36.13	35.79	10.25	25.54	9.38	26.41	9.74	26.05	10.86	24.93
MW-104	28.23	27.98					2.76	25.22	3.55	24.43

Table 1
(continued)
Groundwater Measurements

Monitoring Well	Surface Elev.	MP Elev.	10-17-11		11-18-11		11-29-11		5-2-12	
			Depth	Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.
MW-101	36.77	36.37	11.50	24.87	15.68	20.69	17.19	19.18	>20	<16.37
MW-102	36.35	35.93	10.86	25.07	15.78	20.15	17.32	18.61	>20	<15.93
MW-103	36.13	35.79	10.54	25.25	16.83	18.96	18.54	17.25	>20	<15.79
MW-104	28.23	27.98			6.83	21.15			>15	<12.98
MW-8	27.97	27.51			5.22	22.29			>8	<18.60
MW-9	30.24	29.99			7.39	22.60			>8	<19.51

Notes: MP is the north side of the top of the PVC casing within the surface monument.
Ground surface elevations are from a survey by Jim Hart and Associates.

4.0 VACUUM EXTRACTION SYSTEM

4.1 Pilot Test

A pilot test was conducted on December 16, 2012 using a trailer-mounted vacuum system owned and operated by Silver Fern. No permit was required from the Puget Sound Clean Air Agency for the short-term pilot test. The vacuum was set up on Monitoring Well MW-102. The test consisted of a series of vacuum rates ranging from 30 to 68 inches of water of vacuum. Monitoring of adjacent wells showed vacuums of about 0.4 inches of water at Wells MW-101 and MW-102. In addition, a vapor port in the basement of the building was monitored and found to have a vacuum of 0.12 inches of water. A handheld PID was used to monitor the extracted vapors. The PID readings ranged from 90 to 200 parts per million. Three samples of the discharge were obtained. The sample results are summarized in Table 2. The lab results for the samples during the pilot test are attached in Appendix A.

Table 2
VES Pilot Test Analytical Testing Summary

Sample	PID Reading	Vacuum	Gasoline Range Hydrocarbons	Benzene	Toluene	Ethyl benzene	m,p xylene	o-xylene
1	96.8	50"	2,400	1.0U	1.0U	1.0U	3.6	5.0U
2	143	30"	2,500	1.0U	1.0U	1.0U	3.7	5.0U
3	214	30"	2,900	1.0U	1.0U	1.0U	4.7	5.0U

Notes: Vacuum in inches of water.
Analytical results are in ug/L.

4.2 Production System

The production system consists of a trench that provides an individual pipe to each of the three monitoring wells on-site. The individual pipes are routed to allow the system to operate with any one well, two wells, or all three wells in vacuum. Each pipe has a sample port to allow measurement of induced vacuum and to allow sampling of the active vacuum flow. Based on the analytical testing during the pilot test, no permit from the Clean Air Agency is required. This is based on Section 603, Notice of Construction (C) Exemptions (94). The only Toxic Air Contaminant is m,p xylene. With the levels of xylene measured as being present, an assumed air flow of 100 CFM and one year of operation, less than 20 pounds of xylene would be discharged. This is well below the threshold of 1,000 pounds per year. The discharge of generic gasoline range hydrocarbons is not regulated.

The system will be monitored on a weekly basis to verify flow rates and discharge quantities. The initial system is set to draw from MW-102. The flow will continue from MW-102 until the recovery rate becomes asymptotic. The flow will then be shifted to MW-101 or MW-103 and the process repeated until all 3 wells show diminished recovery. We currently plan on two cycles of this process depending upon the actual recovery rates observed during operation.

Confirmation testing will consist of obtaining additional samples from the smear zone where the elevated hydrocarbons were encountered during initial sampling of the site. The samples will be taken using Direct Push Technology rigs. We currently plan three adjacent to the existing USTs and three along the western property line.

5.0 PRIOR TESTING SUMMARY

Prior testing is summarized in our Phase II ESA and our Technical Memo dated December 1, 2011. In our Phase I ESA, we present the results of analysis of two soil samples for poly cyclic aromatic hydrocarbons. The testing was done as part of the MTCATPH analysis to arrive at a site specific cleanup level. Table 3 summarizes the carcinogenic PAHs. As can be seen in the following table, using the toxicity equivalency factors, the sum of the cPAHs does not exceed the MTCA Method A cleanup value of 0.1 ppm.

Table 3
cPAH Summary

MW-102at 10'

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.014	1	0.014
benzo(a)anthracene	0.0093	0.1	0.00093
benzo(b)fluoranthene	0.0084	0.1	0.00084
benzo(k)fluoranthene	0.0087	0.1	0.00087
chrysene	0.011	0.01	0.00011
dibenz(a,h)anthracene	0.0078	0.1	0.00078
indeno(1,2,3-cd)pyrene	0.0078	0.1	0.00078
TOTAL CPAH	0.067		**0.01831**

Table 3
(continued)
cPAH Summary

MW-102@8'

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.067	1	0.067
benzo(a)anthracene	0.035	0.1	0.0035
benzo(b)fluoranthene	0.039	0.1	0.0039
benzo(k)fluoranthene	0.035	0.1	0.0035
chrysene	0.046	0.01	0.00046
dibenz(a,h)anthracene	0.0092	0.1	0.00092
indeno(1,2,3-cd)pyrene	0.0.3	0.1	0.003
TOTAL CPAH	0.2612		**0.08228**

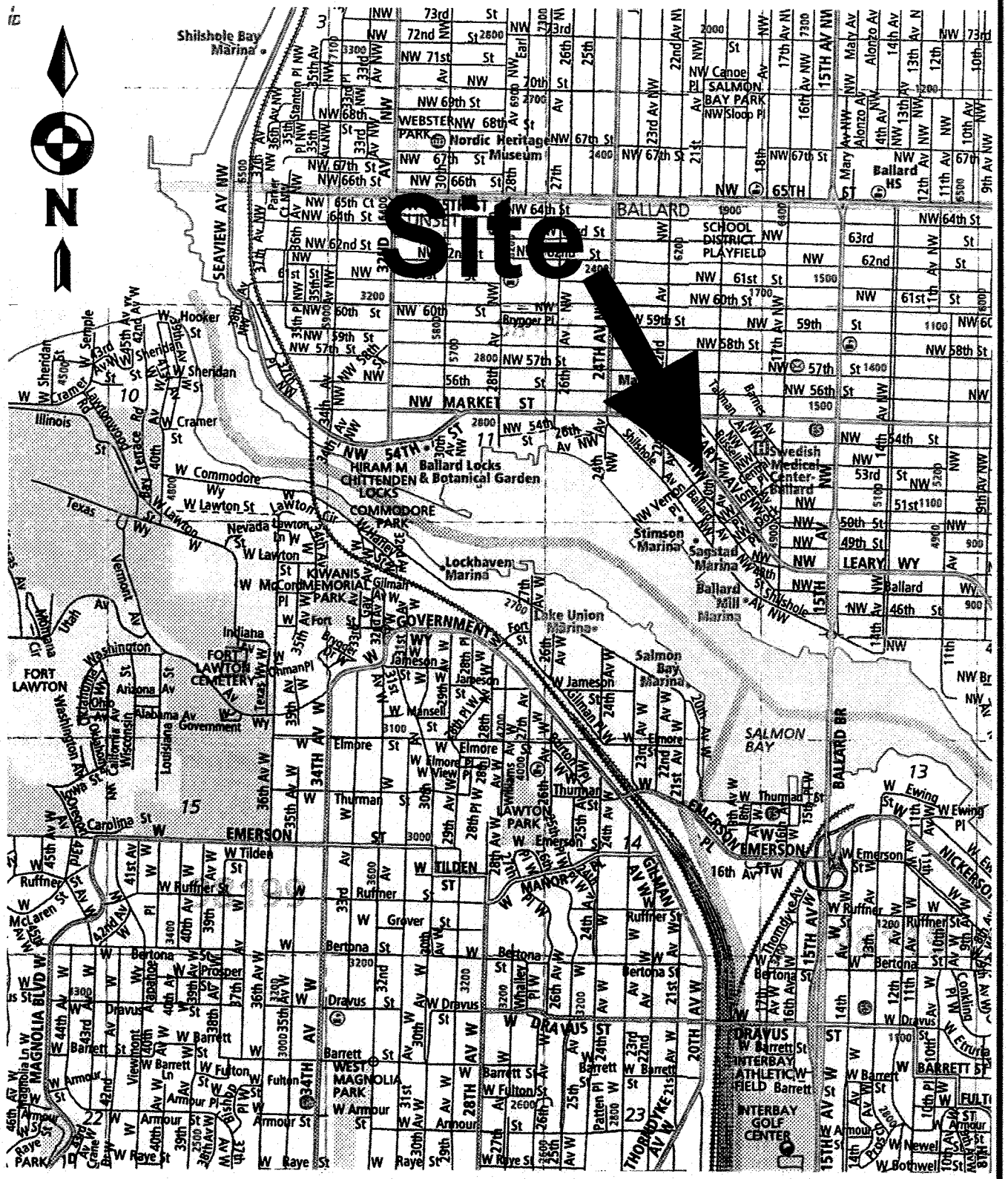
Notes: All units are parts per million (ppm).
TEF is from Table 708-2.

6.0 LIMITATIONS

This memo is the copyrighted property of Terra Associates, Inc. and was prepared in accordance with generally accepted local geo-environmental engineering practices and within the limitations of time and budget. Analytical testing of samples was based on our understanding of past land uses documented in reports by others and the tax records. In the event additional information regarding site history or current site uses is found, the information should be brought to our attention, as it may affect our conclusions.

This memo is intended for specific application to the 5221 Ballard Avenue NW project, and is for the exclusive use of Halco Properties, LLC and their authorized representatives. No other warranty, expressed or implied, is made.

The analyses and recommendations presented in this memo are based on information prepared by others together with data obtained from explorations advanced on the site, and selected analyses of environmental samples for this study. The conclusions reached in this report are our opinions based on the previous and current explorations and analytical test data summarized and discussed in this report. Subsurface conditions may vary and seasonal variations in groundwater may occur.



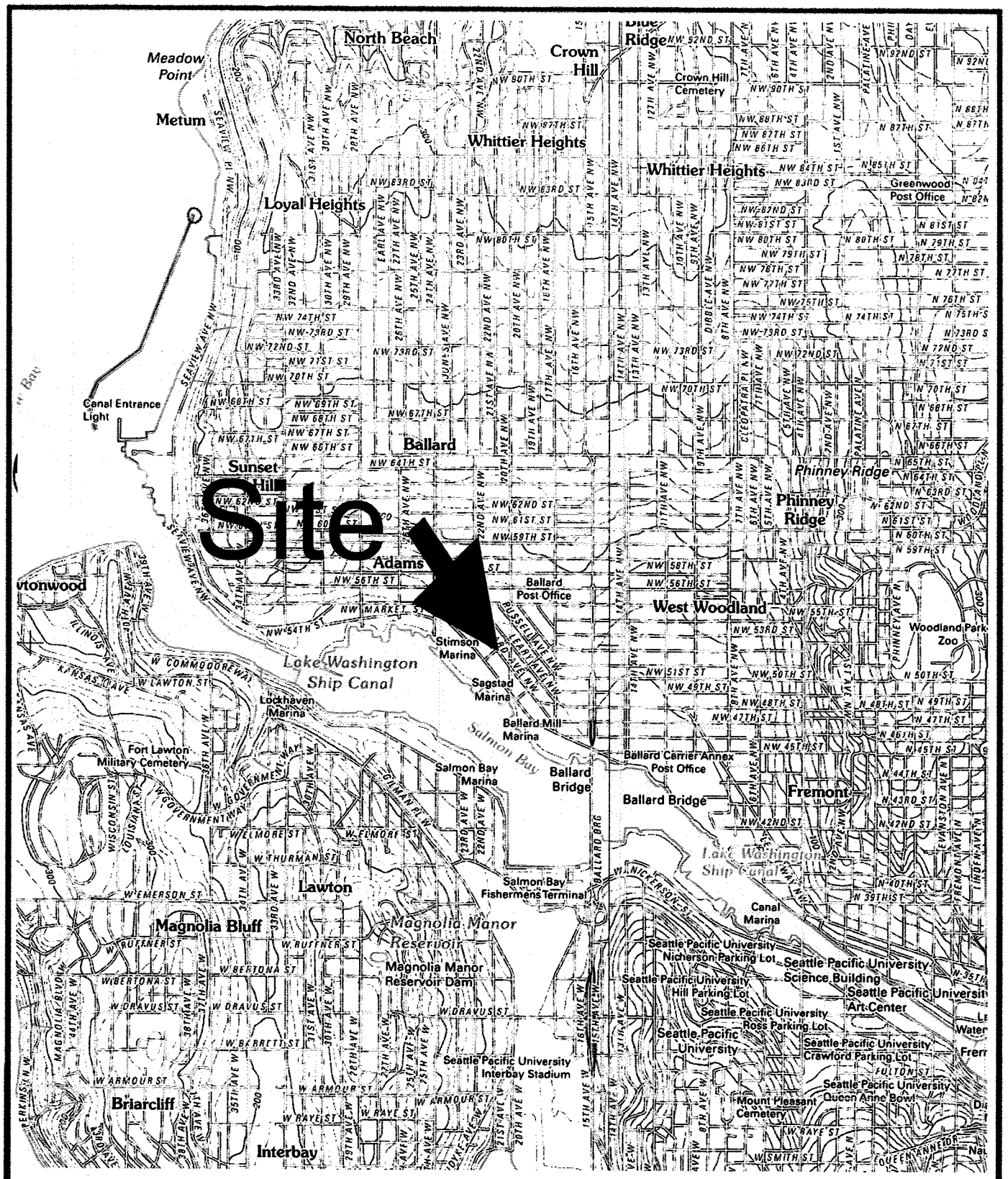
Reference: Thomas Bros King County Road Atlas. NOT TO SCALE

TERRA ASSOCIATES

Geotechnical Consultants

Vicinity Map
5221 Ballard Ave NW
Seattle, Washington

Proj. No T-6552	Date May 2012	Figure 1



Reference: Bellevue Seattle North and Shilshole Bay USGS Quadrangles

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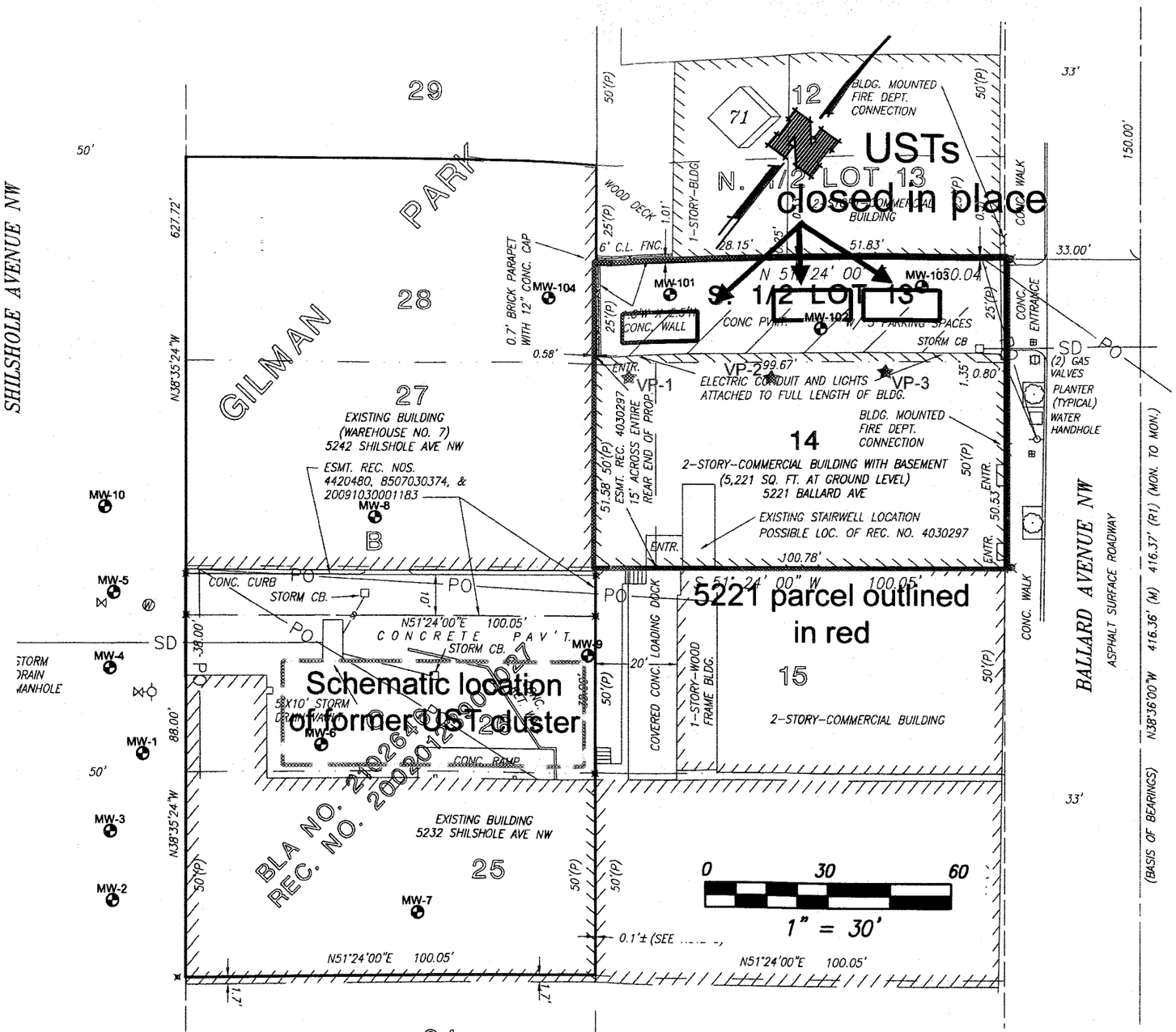
Topographic Vicinity Map
5221 Ballard Ave NW
Seattle, Washington

Proj. No T-6552	Date May 2012	Figure 2



Reference: Survey by Jim Hart and Associates

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Exploration Location Plan
5221 Ballard Ave NW
Seattle, Washington

Proj. No. T-6552	Date May 2012	Figure 3

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 23, 2011

Chuck Lie
Terra Associates, Inc.
12525 Willows Road, Suite 101
Kirkland, WA 98034

Re: Analytical Data for Project 6552
Laboratory Reference No. 1112-119

Dear Chuck:

Enclosed are the analytical results and associated quality control data for samples submitted on December 16, 2011.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: December 23, 2011
Samples Submitted: December 16, 2011
Laboratory Reference: 1112-119
Project: 6552

Case Narrative

Samples were collected on December 15, 2011 and received by the laboratory on December 16, 2011. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

The sample chromatograms are similar to mineral spirits.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: December 23, 2011
Samples Submitted: December 16, 2011
Laboratory Reference: 1112-119
Project: 6552

NWTPH-Gx/BTEX

Matrix: Air
Units: nl/ml (ppmv)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**102 #1**					
Laboratory ID:	12-119-01					
Benzene	**ND**	0.31	EPA 8021	12-16-11	12-16-11	
Toluene	**ND**	0.26	EPA 8021	12-16-11	12-16-11	
Ethyl Benzene	**ND**	0.23	EPA 8021	12-16-11	12-16-11	
m,p-Xylene	**0.81**	0.23	EPA 8021	12-16-11	12-16-11	
o-Xylene	**ND**	1.2	EPA 8021	12-16-11	12-16-11	U1
Gasoline	**500**	21	NWTPH-Gx	12-16-11	12-16-11	Z
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*73-121*				
Client ID:	**102 #2**					
Laboratory ID:	12-119-02					
Benzene	**ND**	0.31	EPA 8021	12-16-11	12-16-11	
Toluene	**ND**	0.26	EPA 8021	12-16-11	12-16-11	
Ethyl Benzene	**ND**	0.23	EPA 8021	12-16-11	12-16-11	
m,p-Xylene	**0.85**	0.23	EPA 8021	12-16-11	12-16-11	
o-Xylene	**ND**	1.2	EPA 8021	12-16-11	12-16-11	U1
Gasoline	**530**	21	NWTPH-Gx	12-16-11	12-16-11	Z
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*73-121*				
Client ID:	**102 #3**					
Laboratory ID:	12-119-03					
Benzene	**ND**	0.31	EPA 8021	12-16-11	12-16-11	
Toluene	**ND**	0.26	EPA 8021	12-16-11	12-16-11	
Ethyl Benzene	**ND**	0.23	EPA 8021	12-16-11	12-16-11	
m,p-Xylene	**1.1**	0.23	EPA 8021	12-16-11	12-16-11	
o-Xylene	**ND**	1.2	EPA 8021	12-16-11	12-16-11	U1
Gasoline	**620**	21	NWTPH-Gx	12-16-11	12-16-11	Z
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*73-121*				

Date of Report: December 23, 2011
Samples Submitted: December 16, 2011
Laboratory Reference: 1112-119
Project: 6552

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Air
Units: nl/ml (ppmv)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1216A1					
Benzene	**ND**	0.31	EPA 8021	12-16-11	12-16-11	
Toluene	**ND**	0.26	EPA 8021	12-16-11	12-16-11	
Ethyl Benzene	**ND**	0.23	EPA 8021	12-16-11	12-16-11	
m,p-Xylene	**ND**	0.23	EPA 8021	12-16-11	12-16-11	
o-Xylene	**ND**	0.23	EPA 8021	12-16-11	12-16-11	
Gasoline	**ND**	21	NWTPH-Gx	12-16-11	12-16-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*73-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	12-119-02									
	ORIG	DUP								
Benzene	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA	NA	NA	30	
m,p-Xylene	**0.850**	**0.820**	NA	NA		NA	NA	4	30	
o-Xylene	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Gasoline	**530**	**540**	NA	NA		NA	NA	2	30	
Surrogate:										
Fluorobenzene						*102* *99*	*73-121*			

Matrix: Air
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**102 #1**					
Laboratory ID:	12-119-01					
Benzene	**ND**	1.0	EPA 8021	12-16-11	12-16-11	
Toluene	**ND**	1.0	EPA 8021	12-16-11	12-16-11	
Ethyl Benzene	**ND**	1.0	EPA 8021	12-16-11	12-16-11	
m,p-Xylene	**3.6**	1.0	EPA 8021	12-16-11	12-16-11	
o-Xylene	**ND**	5.0	EPA 8021	12-16-11	12-16-11	U1
Gasoline	**2400**	100	NWTPH-Gx	12-16-11	12-16-11	Z
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*73-121*				
Client ID:	**102 #2**					
Laboratory ID:	12-119-02					
Benzene	**ND**	1.0	EPA 8021	12-16-11	12-16-11	
Toluene	**ND**	1.0	EPA 8021	12-16-11	12-16-11	
Ethyl Benzene	**ND**	1.0	EPA 8021	12-16-11	12-16-11	
m,p-Xylene	**3.7**	1.0	EPA 8021	12-16-11	12-16-11	
o-Xylene	**ND**	5.0	EPA 8021	12-16-11	12-16-11	U1
Gasoline	**2500**	100	NWTPH-Gx	12-16-11	12-16-11	Z
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*73-121*				
Client ID:	**102 #3**					
Laboratory ID:	12-119-03					
Benzene	**ND**	1.0	EPA 8021	12-16-11	12-16-11	
Toluene	**ND**	1.0	EPA 8021	12-16-11	12-16-11	
Ethyl Benzene	**ND**	1.0	EPA 8021	12-16-11	12-16-11	
m,p-Xylene	**4.7**	1.0	EPA 8021	12-16-11	12-16-11	
o-Xylene	**ND**	5.0	EPA 8021	12-16-11	12-16-11	U1
Gasoline	**2900**	100	NWTPH-Gx	12-16-11	12-16-11	Z
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*73-121*				

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z - The sample chromatograms are similar to mineral spirits.

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Laboratory Number: 12-119

Company: TAI
Project Number: 6552
Project Name: ———
Project Manager: Chuck Lie
Sampled by: Nicolas R Hoffman

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Days
- ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ _____ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664				% Moisture
1	102 #1	12/5/11	11:23	Air	1		X																		
2	102 #2	↓	14:00	↓	↓		X																		
3	102 #3	↓	16:25	↓	↓		X																		

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		TAI	12/6/11	7:30	
Received		TAI	"	"	
Relinquished		TAI	12/16	11 AM	
Received		ASE	12/16	1100	
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) _____