

Source Assessment

City Shop and Sewage Treatment Plant
Moxee, Washington

for
Washington State Department of Ecology

May 21, 2012



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File No. 0504-078-00

May 21, 2012

Prepared for:

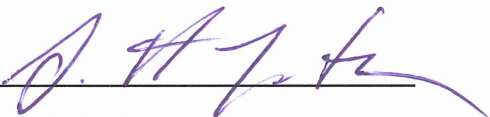
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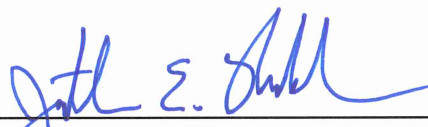
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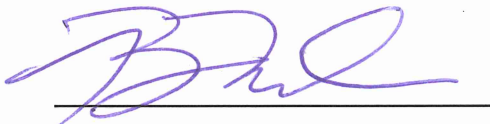
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1.0 INTRODUCTION

This report describes source assessment activities conducted at the City Shop and Sewage Treatment Plant (STP) site located in Moxee, Washington (herein referred to as “site”). The site is located approximately as shown in the attached Vicinity Map, Figure 1.

Environmental activities at the site currently are managed by the Washington State Department of Ecology (Ecology). GeoEngineers was retained by Ecology to assess subsurface soil and groundwater conditions at the site and provide recommendations and steps to either remediate the site or bring it to regulatory closure. This report describes field activities and observations, includes chemical analytical results from soil and groundwater samples collected at the site, and provides recommendations for further assessment. The purpose of the assessment activities described herein was to evaluate if prior site remedial activities and subsequent contaminant attenuation were sufficient to warrant a No Further Action (NFA) designation for the site and, if not, to identify appropriate investigative and/or remedial activities for observed site conditions.

2.0 SITE DESCRIPTION AND BACKGROUND

The site is located at 7520 Postma Road in Moxee, Washington and occupies about 2.8 acres. The site is bounded by a railroad line and State Route 24 on the south, and commercial properties on the west, north and east. The site, currently being used as a shop servicing City of Moxee equipment, formerly contained an operational STP. Several buildings and structures associated with the STP remain in the western portion of the site. The active portion of the site, which contains two buildings and an asphalt parking area associated with shop operations, is situated with the eastern portion of the site.

Our understanding of previous site assessment and remedial activities was primarily obtained through review of the following two reports:

- Report by Sage Earth Sciences, Inc. (Sage) summarizing results of 1996 underground storage tank (UST) removal activities performed at the site, (June 1996).
- Report by Maxim Technologies, Inc. (Maxim) summarizing results of a 1996 environmental investigation performed at the site, (December 1996).

Two, 1,000-gallon capacity, gasoline USTs were removed from the site during May 1996. During UST removal activities, corrosion, pitting, and small holes were observed on the tanks. Approximately 50 cubic yards of petroleum-contaminated soil encountered during excavation activities were excavated, treated on-site via bio-remediation and subsequently used to backfill the excavation. Groundwater was encountered between 4 and 5 feet below ground surface (bgs) in the UST excavation. These USTs were believed to have been installed in 1977 and used to fuel City vehicles. The USTs were located about 40 feet south of the former STP Control Office, approximately as shown in 1996 UST Excavation and Test Pit Locations, Figure 2.

Confirmation soil samples collected from the UST excavation did not contain concentrations of petroleum hydrocarbons in excess of Model Toxics Control Act (MTCA) Method A cleanup levels. However, a groundwater sample collected from the excavation contained concentrations of the

following analytes that were several orders of magnitude greater than MTCA Method A groundwater cleanup levels: gasoline-range petroleum hydrocarbons (GRPH); benzene, toluene, ethylbenzene, and total xylenes (BTEX); and lead.

Additional soil assessment activities were conducted in August 1996 by Maxim. These activities included expanding the UST excavation (to the west) to confirm the original soil excavation activities had sufficiently removed petroleum-contaminated soil. Maxim concluded that all petroleum-contaminated soil associated with the USTs had been successfully removed and treated. However, no discussion of assessment associated with dispensers or underground piping is presented in either the Sage or Maxim reports.

Maxim also excavated four test pits to depths of about 8 feet bgs to collect groundwater samples. Approximate test pit locations are presented in Figure 2. Encountered soil generally consisted of a surficial silty clay layer that extended about 6 feet bgs and was underlain by sand and gravel. Groundwater was encountered at depths between about 6 and 8 feet bgs. Maxim indicated that groundwater flow direction at the site likely was to the west/southwest, although site-specific groundwater elevation data were not collected. Groundwater samples were collected from each test pit and submitted to an analytical laboratory for GRPH and BTEX analyses. Results indicated GRPH, benzene, ethylbenzene, and xylenes were detected in the groundwater sample collected from test pit 3 (located about 10 feet southwest of the UST excavation) at concentrations greater than MTCA Method A cleanup criteria. Maxim recommended the installation of a groundwater monitoring well network at the site, although we understand this was not completed.

Additional details regarding site background and history are included in our previous technical memorandum dated January 31, 2012 (GeoEngineers 2012A).

3.0 SCOPE OF WORK

GeoEngineers prepared a Sampling and Analysis Plan (SAP), dated January 31, 2012 (GeoEngineers, 2012B) based on a file review of site environmental activities performed to date. The SAP was designed to assess if residual soil, groundwater, and/or soil vapor contamination is located at the site and further remedial action and/or an environmental covenant was warranted. The scope of services performed by GeoEngineers during implementation of the SAP included:

- Prepared a Health and Safety Plan (HASP) and Quality Assurance Project Plan (QAPP) for sampling activities (previously provided as appendices to the SAP).
- Coordinated underground utility location services using the Call-Before-You-Dig utility notification service before beginning drilling activities.
- Subcontracted a private utility locator to clear explorations located on private property before drilling.
- Subcontracted Environmental West Exploration Inc. (Environmental West) to drill six soil borings (DP-1 through DP-6) using direct-push drilling methods. Approximate boring locations are presented in 2012 Boring Locations, Figure 3.

- Collected soil samples in 4-foot acrylic sleeves continuously during drilling. Select sub-samples were field-screened using visual observations, water sheen tests, and headspace vapor measurements with a photoionization detector (PID) to assess the possible presence of petroleum-related contaminants. At least one sample from each boring was collected for potential chemical analysis.
- Constructed a monitoring well (designated MW-1) within boring DP-6.
- Developed monitoring well MW-1 by pumping and surging.
- Submitted five soil samples to TestAmerica Inc. (TestAmerica) for chemical analysis. The sample collected from the vadose zone from each boring exhibiting the greatest indications of petroleum contamination, based on field-screening measurements, was submitted for chemical analysis. The soil samples were analyzed for the following: GRPH using Northwest Method NWTPH-Gx; BTEX, 1,2-dichloroethane (EDC), methyl tertiary-butyl ether (MTBE) and n-hexane using Environmental Protection Agency (EPA) Method 8260B; 1,2-dibromoethane (EDB) using EPA Method 8011; naphthalenes using EPA Methods 8270 and 8260B; and lead using EPA Method 6010C. The soil sample with the greatest indications of petroleum contamination was analyzed for fractionalized petroleum hydrocarbons (aliphatics and aromatics) using Northwest VPH and EPH methods.
- Collected one groundwater sample from monitoring well MW-1 and submitted it to TestAmerica for analysis of GRPH using NWTPH-Gx methods, BTEX, EDB, EDC, MTBE, and n-hexane using EPA Method 8260B, naphthalenes by EPA Methods 8270 and 8260B, and lead using EPA Method 6010B. One duplicate sample also was collected and analyzed for the above parameters.
- Contained soil cuttings and groundwater from assessment and/or well construction activities. The investigation-derived waste (IDW) was drummed separately, labeled, and stored on-site pending results of analytical testing.
- Subcontracted Able Cleanup Technologies, Inc. of Spokane, Washington to dispose IDW at Graham Road Landfill in Spokane County, Washington.
- Entered data results information into Ecology's Environmental Information Management (EIM) database.
- Analyzed assessment data to evaluate if the site requires further investigative and/or remedial actions.

4.0 FIELD ACTIVITIES

4.1. General

A private utility locate of the site and adjacent areas was conducted on February 28, 2012. Environmental West Explorations (Environmental West) of Spokane, Washington, advanced six borings (DP-1 through DP-6) to depths of about 8 to 12 feet bgs using a direct-push Geoprobe drill rig on March 1, 2012. The borings generally were positioned south of the former UST excavation, as shown in 2012 Boring Locations, Figure 3.

Boreholes were backfilled with bentonite and the surface was patched with cold patch asphalt as needed. Soil cuttings and decontamination water were placed in 55-gallon steel drums, labeled, and stored on-site.

Boring logs associated with borings DP-1 to DP-6 are provided in Figures A-2 through A-7 of Appendix A. Representative site photographs demonstrating site conditions at the time of our assessment are provided in Figures B-1 through B-3 of Appendix B.

4.2. Subsurface Conditions

Observed native soil conditions generally are fine-grained and consisted of brown fine sand with silt overlying and interbedded with brown silt with sand. Fill material was observed in each boring, ranging in thickness from ½-foot (DP-3, DP-5, and DP-6) to 6½ feet (DP-1). Each boring penetrated about 2 inches of asphalt underlain by a base layer consisting of brown coarse gravel with silt and sand. This gravel layer was less than ½-foot thick in each boring except DP-2, where it was observed at about 4½ feet in thickness. In borings DP-1 and DP-4, fill consisting of brown to gray silt and fine sand was encountered to depths of about 6½ and 6 feet, respectively.

Groundwater was encountered in each boring during drilling at depths that ranged from about 4 to 4½ feet bgs.

4.3. Field Screening and Sampling

Soil samples were collected continuously in 4-foot acrylic sleeves during drilling. Select sub-samples were field-screened using visual observations, water sheen tests, and headspace vapor measurements with a PID to assess possible presence of petroleum-related contaminants. Procedures for field-screening and sampling are provided in Appendix A. Field screening results are summarized by the following:

- Headspace vapor measurements ranged between 18.5 and 28.5 parts per million (ppm) and moderate to heavy sheens were observed in samples collected from boring DP-1 below the groundwater table (between about 6½ to 10½ feet bgs).
- Headspace vapor was measured at a concentration of 16.9 ppm and a slight sheen was observed in the sample collected from boring DP-4 at a depth of about 4 feet bgs.
- No headspace vapor measurements above background conditions and no sheen were observed in samples collected from borings DP-2, DP-3, DP-5, and DP-6.

Five soil samples collected from the following borings and depths were submitted to TestAmerica for chemical analysis:

- A depth of about 4½ to 5 feet in DP-2.
- A depth of about 4 to 4½ feet in DP-3.
- A depth of about 4 to 4½ feet in DP-4.
- A depth of about 4 to 5 feet in DP-5.
- A depth of about 4½ to 5 feet in DP-6.

Chemical analytical results are discussed in **Section 5.0**.

4.3 Monitoring Well Construction

A monitoring well, designated MW-1, was installed in boring DP-6. Well construction details are provided in Figure A-7 of Appendix A. The monitoring well was installed using direct-push drilling techniques and constructed of ¾-inch-diameter, Schedule 40 polyvinyl chloride (PVC) casing and pre-pack well screen surrounded by a sand filter pack and bentonite seal. The installed well screen extends from about 1.8 to 11.8 feet bgs. Depth to groundwater with monitoring well MW-1, at the time of installation, was about 4.5 feet bgs.

Monitoring well MW-1 was completed with a flush-mount surface monument. A lockable compression cap was installed to seal the top of the PVC well casing. A concrete surface seal was constructed around the monument at the ground surface to divert surface water away from the well casing.

A groundwater sample was collected from monitoring well MW-1 on March 1, 2012 and submitted to TestAmerica for chemical analysis.

5.0 CHEMICAL ANALYTICAL RESULTS

Five soil samples and two groundwater samples (the primary and duplicate samples collected from monitoring well MW-1) were analyzed by TestAmerica for concentrations of the site contaminants of concern (GRPH, BTEX, MTBE, n-hexane, EDB, EDC, naphthalenes and lead) by the methods listed in **Section 3.0**. TestAmerica's laboratory report is provided in Appendix C. Analytical results are tabulated in Summary of Chemical Analytical Results – Soil, Table 1 and Summary of Chemical Analytical Results – Groundwater, Table 2. Chemical analytical results are compared to MTCA Method A cleanup levels for Unrestricted Land Use and are summarized by the following:

5.1. Soil

- Contaminants of concern either were not detected or were detected at concentrations less than MTCA Method A cleanup levels in the five soil samples. However, note that the reporting limit for EDB in the sample collected from DP-4 was at a concentration of 12 micrograms per kilogram ($\mu\text{g}/\text{kg}$), which is greater than MTCA Method A cleanup level of 5 $\mu\text{g}/\text{kg}$.
- Soil sample DP-4(4-4.5) was additionally analyzed for fractionalized hydrocarbons (EPH and VPH). Total VPH concentration was reported at 19 milligrams per kilogram (mg/kg), assuming non-detectable concentrations are equal to one half the reporting limits. EPH concentrations were detected within aliphatic group C21-C34 and aromatic group C21-C34 at concentrations of 39 mg/kg and 59 mg/kg , respectively.
- Based on our evaluation of fractionalized petroleum hydrocarbons using Ecology's MTCATPH161 program, we calculated a site-specific MTCA Method B cleanup level for total petroleum hydrocarbons of 300 mg/kg . This cleanup level was not exceeded in samples described herein. A summary of our calculations is provided in Appendix D.

5.2. Groundwater

- GRPH were detected in the primary and duplicate groundwater samples collected from monitoring well MW-1 at concentrations of 1,550 and 1,510 micrograms per liter ($\mu\text{g/l}$), respectively) These concentrations exceed the applicable MTCA Method A cleanup level of 800 $\mu\text{g/l}$.
- The remaining contaminants of concern were either not detected or detected at concentrations less than respective cleanup levels in the groundwater samples.

6.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Soil and groundwater assessment field activities were conducted on March 1, 2012 at the Moxee City Shop and STP site located at 7520 Postma Road in Moxee, Washington. Six direct-push soil borings were advanced to depths ranging from about 8 to 12 feet bgs. Shallow native soil conditions at the site generally are fine-grained and consist of brown fine sand with silt overlying and interbedded with brown silt with sand. Overlying fill material is composed primarily of silt and fine sand or gravel (depending on location) and ranges from about ½-foot to 6½ feet in observed thickness. Groundwater was encountered in the borings at about 4½ to 5 feet bgs.

Contaminants of concern were not detected in soil samples at concentrations greater than MTCA Method A cleanup levels. However, GRPH were detected at concentrations greater than the applicable MTCA Method A cleanup level in the primary and duplicate groundwater samples collected from monitoring well MW-1. These results suggest that groundwater transport of residual site contamination could be occurring. Note that, based on area groundwater flow conditions, a westerly or southwesterly groundwater flow direction is anticipated within shallow aquifer underlying the site, although this has not been confirmed with site specific information.

Petroleum contamination was not observed greater than respective MTCA Method A cleanup levels in vadose zone soil within the borings advanced during this assessment. However, based on field screening results associated with borings DP-1 and DP-4 and groundwater analytical results associated with monitoring well MW-1, residual site contamination appears to have impacted shallow groundwater a short distance south of the former UST excavation. As a result, additional assessment at the site appears warranted. Existing data gaps consist of the following:

- Groundwater elevation and flow distribution across the site, including any seasonal variation in groundwater flow associated with fluctuations in recharge or irrigation operations.
- Delineation of the presence and extent of existing groundwater contamination downgradient of the former UST excavation, particularly as it relates to the site's south boundary.

To address the data gaps outlined above, the recommended next phase of investigation includes the following components.

- Install three supplemental 2-inch-diameter polyvinyl chloride (PVC) groundwater monitoring wells screened across the groundwater table in the locations presented in Proposed Supplemental Monitoring Well Locations, Figure 4. Monitoring wells should be installed using conventional hollow-stem auger drilling methods.

- MW-2 is intended to be an up-gradient monitoring well, for the purpose of establishing background groundwater quality entering the site.
 - MW-3 and MW-4 are proposed to be sited adjacent to the site boundary downgradient of borings DP-1 and DP-4 and monitoring well MW-1.
- Conduct a groundwater sampling event during which samples collected from site monitoring wells should be analyzed for the following contaminants: GRPH using Northwest Method NWTPH-Gx; BTEX, and n-hexane using EPA Method 8260C; and naphthalenes (including naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene) using EPA Methods 8260C and 8270. Groundwater samples also should be analyzed for natural attenuation parameters, including: temperature; pH; dissolved oxygen; oxidation-reduction potential (ORP); alkalinity; nitrate; sulfate; and ferrous iron.
 - Based on results of the above-described groundwater sampling event, evaluate whether (1) initiation of a quarterly groundwater sampling program; and/or (2) collection of data necessary to design an in-situ chemical oxidation-based or enhanced bioremediation-based remediation strategy is warranted.

7.0 LIMITATIONS

We have prepared this report for the exclusive use of Ecology and their authorized agents.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. The conclusions and opinions presented in this report are based on our professional knowledge, judgment and experience. No warranty or other conditions, express or implied, should be understood.

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Please refer to “Report Limitations and Guidelines for Use”, Appendix E for additional information pertaining to use of this report.

8.0 REFERENCES

GeoEngineers, Inc. 2012A. “Memorandum, Moxee City Shop and STP, File Review Summary.”
January 31, 2012.

GeoEngineers, Inc. 2012B. “Sampling and Analysis Plan, Soil and Groundwater Assessment, Moxee City Shop and STP, Moxee, Washington.” January 31, 2012.

Table 1
Summary of Chemical Analytical Results -Soil¹
Moxee City Shop and STP
Moxee, Washington

Sample Number Date Sampled Sample Depth (Feet Bgs)	Soil Samples					MTCA Method A Cleanup Levels ² (Soil)
	DP-2	DP-3	DP-4	DP-5	DP-6	
	03/01/12	03/01/12	03/01/12	03/01/12	03/01/12	
	4-5-5	4-4-5	4-4-5	4-5	4-5-5	
GRPH ³ (mg/kg)	<7.62	<7.94	37.9	<7.48	<7.74	30/100
MTBE ⁴ (mg/kg)	<0.0457	<0.0476	<0.0425	<0.0449	<0.0464	0.10
Benzene ⁴ (mg/kg)	<0.0229	<0.0238	<0.0213	<0.0224	<0.0232	0.03
Ethylbenzene ⁴ (mg/kg)	<0.152	<0.159	<0.142	<0.150	<0.155	6
Toluene ⁴ (mg/kg)	<0.152	<0.159	<0.142	<0.150	<0.155	7
Total Xylenes ⁴ (mg/kg)	<2.29	<2.38	<2.13	<2.24	<2.32	9
2-Methylnaphthalene ⁵ (mg/kg)	<0.0130	<0.0129	0.0289	<0.0127	<0.0126	5
1-Methylnaphthalene ⁵ (mg/kg)	<0.0130	<0.0129	0.0185	<0.0127	<0.0126	5
Naphthalene ⁵ (mg/kg)	<0.305	<0.305	<0.284	<0.309	<0.309	5
1,2-Dichloroethane (EDC) ⁴ (mg/kg)	<0.152	<0.159	<0.142	<0.150	<0.155	NE
1,2-Dibromoethane (EDB) ⁵ (µg/kg)	<1.27	<1.31	<12.0	<1.19	<1.28	5
Hexane ⁴ (mg/kg)	<0.152	<0.159	<0.142	<0.150	<0.155	NE
C5-C6 Aliphatics (mg/kg)	--	--	<2.2	--	--	NE
C6-C8 Aliphatics (mg/kg)	--	--	2.4	--	--	NE
C8-C10 Aliphatics (mg/kg)	--	--	2.3	--	--	NE
C10-C12 Aliphatics (mg/kg)	--	--	3.8	--	--	NE
C8-C10 Aromatics (mg/kg)	--	--	2.3	--	--	NE
C10-C12 Aromatics (mg/kg)	--	--	6.0	--	--	NE
C12-C13 Aromatics (mg/kg)	--	--	<2.2	--	--	NE
Total VPH ⁹ (mg/kg)	--	--	19.0	--	--	NE
C10-C12 Aliphatics (mg/kg)	--	--	<24	--	--	NE
C12-C16 Aliphatics (mg/kg)	--	--	<24	--	--	NE
C16-C21 Aliphatics (mg/kg)	--	--	<24	--	--	NE
C21-C34 Aliphatics (mg/kg)	--	--	39	--	--	NE
C10-C12 Aromatics (mg/kg)	--	--	<24	--	--	NE
C12-C16 Aromatics (mg/kg)	--	--	<24	--	--	NE
C16-C21 Aromatics (mg/kg)	--	--	<24	--	--	NE
C21-C34 Aromatics (mg/kg)	--	--	59	--	--	NE
Lead ¹⁰ (mg/kg)	5.30	6.18	5.53	4.95	7.24	250

Notes:

¹Samples analyzed by TestAmerica, Inc. located in Spokane Valley, Washington.

²Washington State Model Toxics Control Act (MTCA) Method A Unrestricted Land Use cleanup levels. Bold font indicates analyte concentrations in excess of respective cleanup levels.

³Gasoline-range petroleum hydrocarbons (GRPH) analyzed using Northwest Method NWTPH-Gx. GRPH cleanup levels in soil are 30 mg/kg when benzene is detected and 100 mg/kg when benzene is not detected.

⁴Volatile organic compounds (VOCs) analyzed using Environmental Protection Agency (EPA) Method 8260C. Total Xylenes includes o-xylene and m,p-xylene.

⁵Naphthalene concentration analyzed using EPA Method 8260C. 1-methylnaphthalene and 2-methylnaphthalene analyzed by EPA Method 8270. MTCA Method A cleanup level (5 mg/kg) refers to the sum of naphthalene, 1-methylnaphthalene and 2-methylnaphthalene.

⁶1,2-Dibromoethane (EDB) analyzed using EPA Method 8011.

⁷Volatile petroleum hydrocarbons (VPH) analyzed using Northwest Method NWTPH/VPH.

⁸Extractable petroleum hydrocarbons (EPH) analyzed using Northwest Method NWTPH/EPH.

⁹Non-detectable concentrations assumed to be one half the reporting limit.

¹⁰Total lead analyzed using EPA Method 6010C.

mg/kg = milligrams per kilogram; µg/kg = micrograms per kilogram; bgs = below ground surface; NE = Not Established; MTBE = methyl tert-butyl ether

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Table 2
Summary of Chemical Analytical Results -Groundwater¹
Moxee City Shop and STP
Moxee, Washington

Sample Number Date Sampled Sample Depth (Feet Bgs)	Groundwater Samples (µg/l)		MTCA Method A cleanup levels ² (Groundwater)
	MW-1	Dup	
	03/01/12	03/01/12	
GRPH ³ (mg/l)	1,550	1,510	800/1,000
MTBE ⁴ (mg/l)	<0.500	<0.500	20
Benzene ⁴ (mg/l)	0.210	0.220	5
Ethylbenzene ⁴ (mg/l)	80.9	80.9	700
Toluene ⁴ (mg/l)	<0.500	<0.500	1,000
Total Xylenes ⁴ (mg/l)	11.1	11.1	1,000
2-Methylnaphthalene ⁵ (mg/l)	0.495	0.505	160
1-Methylnaphthalene ⁵ (mg/l)	4.74	4.78	160
Naphthalene ⁵ (mg/l)	9.32	9.27	160
1,2-Dichloroethane (EDC) ⁴ (mg/l)	<0.500	<0.500	5
1,2-Dibromoethane (EDB) ⁶ (µg/l)	<0.0100	<0.0100	0.01
Hexane ⁴ (mg/l)	1.30	1.42	NE
Lead (mg/l) ⁷	<10	<10	15

Notes:

¹Samples analyzed by TestAmerica Laboratories, Inc. of Spokane Valley, Washington.

²Washington State Model Toxics Control Act (MTCA) Method A cleanup levels. Bold font indicates analyte concentrations in excess of respective cleanup levels.

³Gasoline-range petroleum hydrocarbons (GRPH) analyzed using Northwest Method NWTPH-Gx. GRPH cleanup levels in groundwater are 800 µg/l when benzene is present and 1,000 µg/l when benzene is not detected.

⁴Volatile organic compounds (VOCs) analyzed using Environmental Protection Agency (EPA) Method 8260C. Total Xylenes includes o-xylene and m,p-xylene.

⁵Naphthalene concentration analyzed using EPA Method 8260C. 1-methylnaphthalene and 2-methylnaphthalene analyzed by EPA Method 8270. MTCA Method A cleanup level (160 µg/l) refers to the sum of naphthalene, 1-methylnaphthalene and 2-methylnaphthalene.

⁶1,2-Dibromoethane (EDB) analyzed using EPA Method 8011.

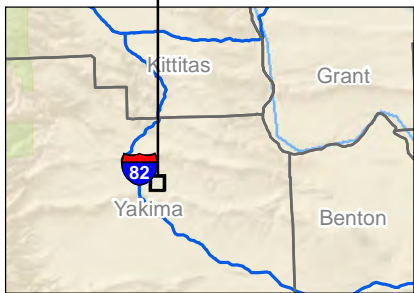
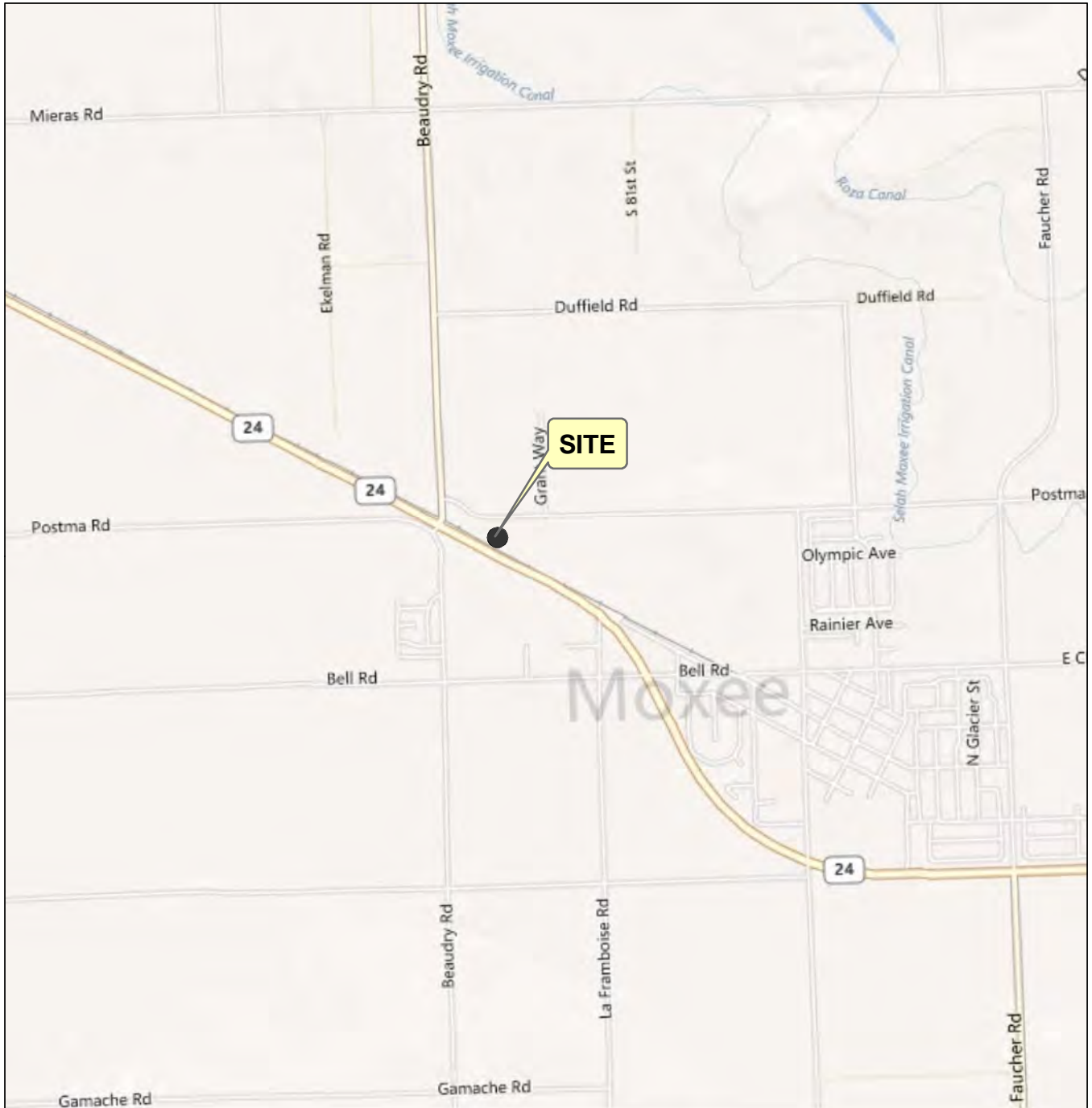
⁷Total lead analyzed using EPA Method 6010C and reported by TestAmerica to the method detection limit (MDL).

µg/l = micrograms per liter; bgs = below ground surface; NE = Not Established; MTBE = methyl tert-butyl ether

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Map Revised: 5/17/2012 CRC

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Notes:

- 1. The locations of all features shown are approximate.
 - 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.
- GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
 Data Sources: ESRI Data & Maps, Street Maps 2008.
 Bing Maps Road from ESRI Data Online.
 Projection: NAD 1983, UTM Zone 10 North.

Vicinity Map	
Moxee City Shop and STP Moxee, Washington	
	Figure 1




Map Revised: 5/17/2012 CRC

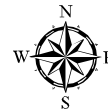
Office: SPOK Path: W:\Spokane\Projects\00504078\GIS\0050407800_F2_UST_TestPits.mxd



Approximate Location of 1996


Test Pits/Groundwater Samples

-  Groundwater Concentrations Exceeded MTCA Method A Cleanup Levels
-  Groundwater Concentrations Did Not Exceed MTCA Method A Cleanup Levels
-  Approximate Location of 1996 UST Excavation



Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication. Data Sources: Bing Maps Aerial from ESRI Data Online. Projection: NAD 1983, UTM Zone 10 North.

1996 UST Excavation and Test Pit Locations	
Moxee City Shop and STP Moxee, Washington	
	Figure 2

Map Revised: 5/17/2012 CRC

Office: SPOK Path: W:\Spokane\Projects\00504078\GIS\00050407800_F3_2012BoringLocs.mxd



- Approximate Direct-Push Boring Location
- Approximate Monitoring Well Location
- Approximate Location of 1996 UST Excavation







Notes:
 1. The locations of all features shown are approximate.
 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
 3. Borings were advanced on March 1, 2012.
 Data Sources: Bing Maps Aerial from ESRI Data Online.
 Projection: NAD 1983, UTM Zone 10 North.

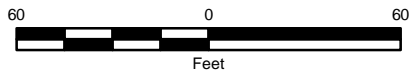
2012 Boring Locations	
Moxee City Shop and STP Moxee, Washington	
	Figure 3

Map Revised: 5/17/2012 CRC


Office: SPOK Path: W:\Spokane\Projects\00504078\GIS\0050407800_F4_ProposedMWLocs.mxd

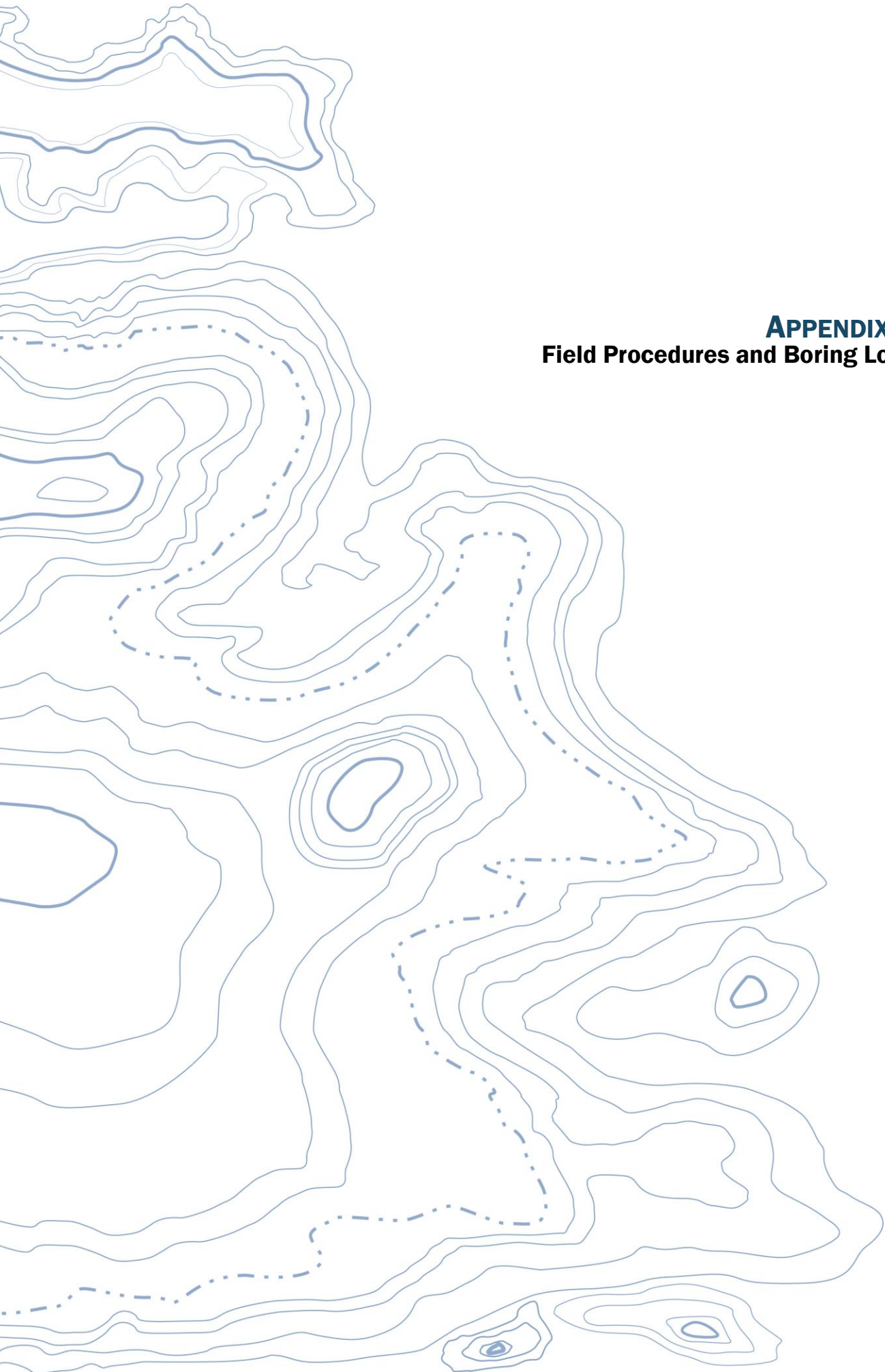


-  Approximate Existing Direct-Push Boring Location
-  Approximate Existing Monitoring Well Location
-  Proposed Supplemental Monitoring Well Location
-  Approximate Location of 1996 UST Excavation



Notes:
 1. The locations of all features shown are approximate.
 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication. Data Sources: Bing Maps Aerial from ESRI Data Online. Projection: NAD 1983, UTM Zone 10 North.

Proposed Supplemental Monitoring Well Locations	
Moxee City Shop and STP Moxee, Washington	
	Figure 4



APPENDIX A
Field Procedures and Boring Logs

APPENDIX A FIELD PROCEDURES AND BORING LOGS

General

Field methods were performed in compliance with the project Sampling and Analysis Plan (SAP) (GeoEngineers 2012B).

Soil Sample Collection

Environmental Protection Agency (EPA) 5035 sampling methods were used to collect the soil samples for gasoline-range petroleum hydrocarbon (GRPH), volatile organic compound (VOC) and fractionalized petroleum hydrocarbon analyses. The soil for analysis of other parameters were placed in laboratory-supplied sample bottles and filled to minimize headspace. All soil samples were stored in a chilled cooler until delivery to the analytical laboratory.

Subsurface conditions at the Moxee City Shop and Sewage Treatment Plant site were explored at select locations on March 1, 2012 by advancing six borings (DP-1 to DP-6) at the approximate locations shown on Figure 3. The borings were advanced about 8 to 12 feet below existing site grade using a direct-push drill rig. Boring locations were established in the field by taping from existing site features. Consequently, exploration locations should be considered accurate to the degree implied by the method used.

The direct-push boring operations were monitored by staff from our firm who examined and classified the soil encountered; obtained soil samples and maintained a continuous log of exploration. Soil encountered in the borings was classified in general accordance with ASTM D 2488 and the classification chart listed in Key to Exploration Logs, Figure A-1. Logs of the borings are presented in Figures A-2 through A-6. The log of the monitoring well is presented in Figure A-7. The logs are based on interpretation of the field data and indicate the depth at which subsurface materials or their characteristics change, although these changes might actually be gradual.

Field Screening of Soil Samples

GeoEngineers' field representative performed field-screening tests on soil samples obtained from the borings. Field screening results were used as a general guideline to assess areas of possible petroleum-related contamination. The field screening methods used include: (1) visual screening; (2) water-sheen screening; and (3) headspace-vapor screening using a MiniRAE Photo Ionization Detector (PID) calibrated to isobutylene.

Visual screening consisted of observing soil for stains indicative of metal- or petroleum-related contamination. Water-sheen screening involved placing soil in a pan of water and observing the water surface for signs of sheen. Sheen screening may detect both volatile and nonvolatile petroleum hydrocarbons. Sheens observed are classified as follows:

No Sheen (NS)	No visible sheen on the water surface.
Slight Sheen (SS)	Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly. Natural organic matter in the soil may produce a slight sheen.
Moderate Sheen (MS)	Light to heavy sheen; may have some color/iridescence; spread is irregular to flowing, may be rapid; few remaining areas of no sheen on the water surface.
Heavy Sheen (HS)	Heavy sheen with color/iridescence; spread is rapid; entire water surface may be covered with sheen.

Headspace vapor screening involved placing a soil sample in a plastic sample bag. Air was captured in the bag, and the bag was shaken to expose the soil to the air trapped in the bag. Headspace vapor screening targeted volatile petroleum hydrocarbon compounds. In this application, the PID measured concentration of organic vapors ionizable by a 10.6 electron volt (ev) lamp in the range between 1.0 and 2,000 parts per million (ppm), with a resolution of +/- 2 ppm.

Field screening results can be site specific. The effectiveness of field screening can vary with temperature, moisture content, organic content, soil type and type and age of contaminant. The presence or absence of a sheen or headspace vapors does not necessarily indicate the presence or absence of contaminants.

Groundwater Elevations

Depths to groundwater were measured relative to the monitoring well casing rim using an electric water level indicator. The probe of the water level indicator was decontaminated after use with a detergent wash, followed by two distilled water rinses.

Low-Flow Sampling Procedures

Groundwater sampling was performed consistent with the EPA's low-flow groundwater sampling procedure, as described by EPA (1996) and Puls and Barcelona (1996). Monitoring well purging activities were accomplished using a Cole-Parmer MasterFlex peristaltic pump equipped with disposable tubing. During purging activities, water quality parameters, including pH, conductivity, temperature, turbidity, oxidation-reduction potential and dissolved oxygen, were measured using a Troll 9500 multi-parameter meter equipped with a flow-through cell; measurements were recorded approximately every three minutes. The meter calibration was verified at the beginning of each work day consistent with manufacturer recommendations prior to purging and sampling activities.

Groundwater samples were collected after (1) water quality parameters had stabilized; or (2) a maximum purge time of thirty minutes was achieved. During purging and sampling, purge rate was not allowed to exceed 500 milliliters per minute. Water quality parameter stabilization criteria include the following:

- Turbidity: ± 10 percent or ± 10 nephelometric turbidity units (NTU);
- Dissolved oxygen: ± 10 percent;
- Conductivity: ± 3 percent;
- pH: ± 0.1 unit;

- Temperature: ± 3 percent; and
- Oxidation reduction potential: ± 10 percent or ± 10 millivolts (mV).

After groundwater quality stabilization criteria were reached, the pump's discharge tubing was disconnected from the flow-through cell and groundwater samples were collected for analysis.

Each sample was pumped directly into sample containers supplied by the laboratory. All groundwater samples collected for chemical analysis were kept cool during on-site storage and transport to the laboratory. Chain-of-custody procedures were observed during transport of the groundwater samples.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% RETAINED ON NO. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS <small>(LITTLE OR NO FINES)</small>		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		CLEAN SANDS <small>(LITTLE OR NO FINES)</small>		SW	WELL-GRADED SANDS, GRAVELLY SANDS
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		SP	POORLY-GRADED SANDS, GRAVELLY SAND
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN GRAVELS <small>(LITTLE OR NO FINES)</small>		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		GRAVELS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		SM	SILTY SANDS, SAND - SILT MIXTURES
		CLAYEY SANDS, SAND - CLAY MIXTURES		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
		INORGANIC CLAYS OF HIGH PLASTICITY		CH	INORGANIC CLAYS OF HIGH PLASTICITY
		ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY		OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

Sampler Symbol Descriptions

	2.4-inch I.D. split barrel
	Standard Penetration Test (SPT)
	Shelby tube
	Piston
	Direct-Push
	Bulk or grab

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

A "P" indicates sampler pushed using the weight of the drill rig.

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS		TYPICAL DESCRIPTIONS
GRAPH	LETTER	
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	TS	Topsoil/ Forest Duff/Sod

Groundwater Contact



Measured groundwater level in exploration, well, or piezometer



Groundwater observed at time of exploration



Perched water observed at time of exploration



Measured free product in well or piezometer

Graphic Log Contact



Distinct contact between soil strata or geologic units



Approximate location of soil strata change within a geologic soil unit

Material Description Contact



Distinct contact between soil strata or geologic units



Approximate location of soil strata change within a geologic soil unit

Laboratory / Field Tests

%F	Percent fines
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
OC	Organic content
PM	Permeability or hydraulic conductivity
PP	Pocket penetrometer
PPM	Parts per million
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen
NT	Not Tested

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

KEY TO EXPLORATION LOGS

Drilled	Start 3/1/2012	End 3/1/2012	Total Depth (ft)	12	Logged By Checked By	KLR SHL	Driller	Environmental West Explorations	Drilling Method	Direct Push	
Surface Elevation (ft) Vertical Datum			Undetermined		Hammer Data		NA		Drilling Equipment		Truck-Mounted Geoprobe Drill Rig
Easting (X) Northing (Y)			System Datum		NA		Groundwater		Date Measured	Depth to Water (ft)	Elevation (ft)
Notes:							3/1/2012		4.5		

Elevation (feet)	FIELD DATA					Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Interval Depth (feet)	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing							
0	36						AC	Approximately 2 inches asphalt concrete pavement				
							GP-GM	Approximately 4 inches brown coarse gravel with silt and sand (dense, moist) (fill) Brown silt with sand and occasional gravel (medium stiff, moist) (fill)				
							ML					
				1						NS	<1	
							SP-SM	Brownish gray fine sand with silt (medium dense, moist) (fill)				
5	36											
				2			SP-SM	Brown to gray fine sand with silt (medium dense, wet) (native)		HS	18.5	Slight petroleum odor
	48											
				3			ML	Brown silt with trace fine sand (medium stiff, wet)		MS	28.5	Slight petroleum odor
10												

Notes: Please refer to Figure A-1 for an explanation of symbols.

Log of Direct-Push Boring DP-1



Project: Moxee City Shop and STP
 Project Location: Moxee, Washington
 Project Number: 0504-078-00

Figure A-2
 Sheet 1 of 1

Spokane: Date: 6/18/12 Path: C:\USERS\MORRIS\DOCUMENTS\GINT_TEMP\050407800.GPJ DBT\template\LT\template\CE\ENGINEERS\GDT\GEIR_ENVIRONMENTAL_STANDARD

Drilled	Start 3/1/2012	End 3/1/2012	Total Depth (ft)	12	Logged By Checked By	KLR SHL	Driller	Environmental West Explorations	Drilling Method	Direct Push	
Surface Elevation (ft) Vertical Datum			Undetermined		Hammer Data		NA		Drilling Equipment		Truck-Mounted Geoprobe Drill Rig
Easting (X) Northing (Y)			System Datum		NA		Groundwater		Date Measured	Depth to Water (ft)	Elevation (ft)
Notes:							3/1/2012		4.0		

Elevation (feet)	FIELD DATA						MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level				
0	36						AC GP-GM			Approximately 2 inches asphalt concrete pavement Brown coarse gravel with silt and sand (medium dense, moist) (fill)
5	36			1			ML			Brown silt with trace fine sand (medium stiff, wet) (native)
10	40			3						

Notes: Please refer to Figure A-1 for an explanation of symbols.

Log of Direct-Push Boring DP-2



Project: Moxee City Shop and STP
 Project Location: Moxee, Washington
 Project Number: 0504-078-00

Figure A-3
 Sheet 1 of 1

Spokane: Date: 6/18/12 Path: C:\USERS\MORRIS\DOCUMENTS\GINT_TEMP\050407800.GPJ DBT\template\LT\template\GEOENGINEERS.GDT\GEIR_ENVIRONMENTAL_STANDARD

Drilled	Start 3/1/2012	End 3/1/2012	Total Depth (ft)	8	Logged By Checked By	KLR SHL	Driller	Environmental West Explorations	Drilling Method	Direct Push		
Surface Elevation (ft) Vertical Datum			Undetermined		Hammer Data		NA		Drilling Equipment		Truck-Mounted Geoprobe Drill Rig	
Easting (X) Northing (Y)			System Datum		NA		Groundwater		Date Measured		Depth to Water (ft)	Elevation (ft)
Notes:								3/1/2012		4.5		

Elevation (feet)	FIELD DATA						MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS	
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level					Graphic Log
0		40					AC			Approximately 2 inches asphalt concrete pavement	
							GP-GM				Approximately 6 inches brown coarse gravel with silt and sand (medium dense, moist) (fill)
							ML				
				1			SP-SM		NS	<1	
		36		2	CA		ML		NS	<1	DP-3 (4-4.5)
5				3					NS	<1	

Notes: Please refer to Figure A-1 for an explanation of symbols.

Log of Direct-Push Boring DP-3



Project: Moxee City Shop and STP
 Project Location: Moxee, Washington
 Project Number: 0504-078-00

Figure A-4
 Sheet 1 of 1

Spokane: Date: 6/18/12 Path: C:\USERS\MORRIS\DOCUMENTS\GINT_TEMP\050407800.GPJ DBT\template\LT\template\GE\ENGINEERS\GDT\GEIR_ENVIRONMENTAL_STANDARD

Drilled	Start 3/1/2012	End 3/1/2012	Total Depth (ft)	8	Logged By Checked By	KLR SHL	Driller	Environmental West Explorations	Drilling Method	Direct Push	
Surface Elevation (ft) Vertical Datum			Undetermined		Hammer Data		NA		Drilling Equipment		Truck-Mounted Geoprobe Drill Rig
Easting (X) Northing (Y)			System Datum		NA		Groundwater		Date Measured	Depth to Water (ft)	Elevation (ft)
Notes:								3/1/2012		4.5	

Elevation (feet)	FIELD DATA						MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS	
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level					Graphic Log
0		36					AC			Approximately 2 inches asphalt concrete pavement	
							GP-GM			Brown coarse gravel with silt and sand (medium dense, moist) (fill)	
				1			SP-SM			Grayish brown fine sand with silt, occasional gravel, debris and wood (medium dense, moist) (fill)	
									NS	<1	
		36		2					SS	16.9	Slight petroleum odor DP-4(4-4.5)
5											
				3			ML			Brownish gray silt with trace sand (medium stiff, wet) (native)	
									NS	<1	

Notes: Please refer to Figure A-1 for an explanation of symbols.

Log of Direct-Push Boring DP-4



Project: Moxee City Shop and STP
 Project Location: Moxee, Washington
 Project Number: 0504-078-00

Spokane: Date: 6/18/12 Path: C:\USERS\MORRIS\DOCUMENTS\GINT_TEMP\050407800.GPJ DBT\emplat\LT\emplate\GE_OENGINEERS.GDT\GEIR_ENVIRONMENTAL_STANDARD

Drilled	Start 3/1/2012	End	Total Depth (ft)	8	Logged By Checked By	KLR SHL	Driller	Environmental West Explorations	Drilling Method	Direct Push	
Surface Elevation (ft) Vertical Datum			Undetermined		Hammer Data		NA		Drilling Equipment		Truck-Mounted Geoprobe Drill Rig
Easting (X) Northing (Y)			System Datum		NA		Groundwater		Date Measured	Depth to Water (ft)	Elevation (ft)
Notes:								3/1/2012		4.5	

Elevation (feet)	FIELD DATA						MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS	
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level					Graphic Log
0		36					AC			Approximately 2 inches asphalt concrete pavement	
							GP-GM			Grayish brown coarse gravel with silt and sand (medium dense, moist) (fill)	
				1			ML			Brown silt with trace sand (medium stiff, moist) (native)	
		36		2							
5				CA							
									NS	<1	
									NS	<1	DP-5 (4-5)

Notes: Please refer to Figure A-1 for an explanation of symbols.

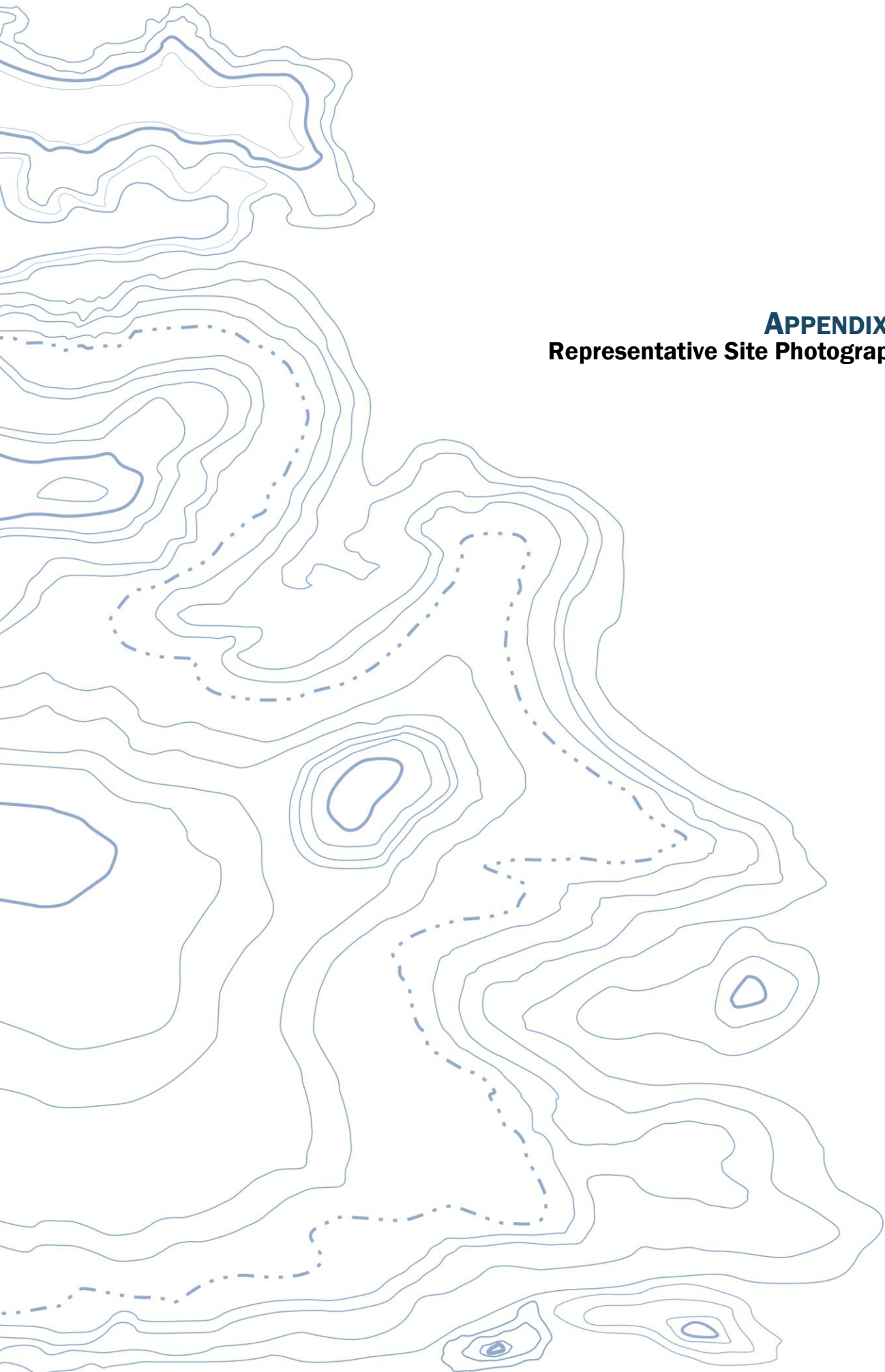
Log of Direct-Push Boring DP-5



Project: Moxee City Shop and STP
 Project Location: Moxee, Washington
 Project Number: 0504-078-00

Figure A-6
 Sheet 1 of 1

Spokane: Date: 6/18/12 Path: C:\USERS\MORRIS\DOCUMENTS\GINT_TEMP\050407800.GPJ DBT\template\LT\template\GE_OENGINEERS.GDT\GEIR_ENVIRONMENTAL_STANDARD



APPENDIX B
Representative Site Photographs



View of parking area south of south shop building and of adjacent commercial property in background (view to east)

Representative Site Photographs

Moxee City Shop and STP
Moxee, Washington



Figure B-1



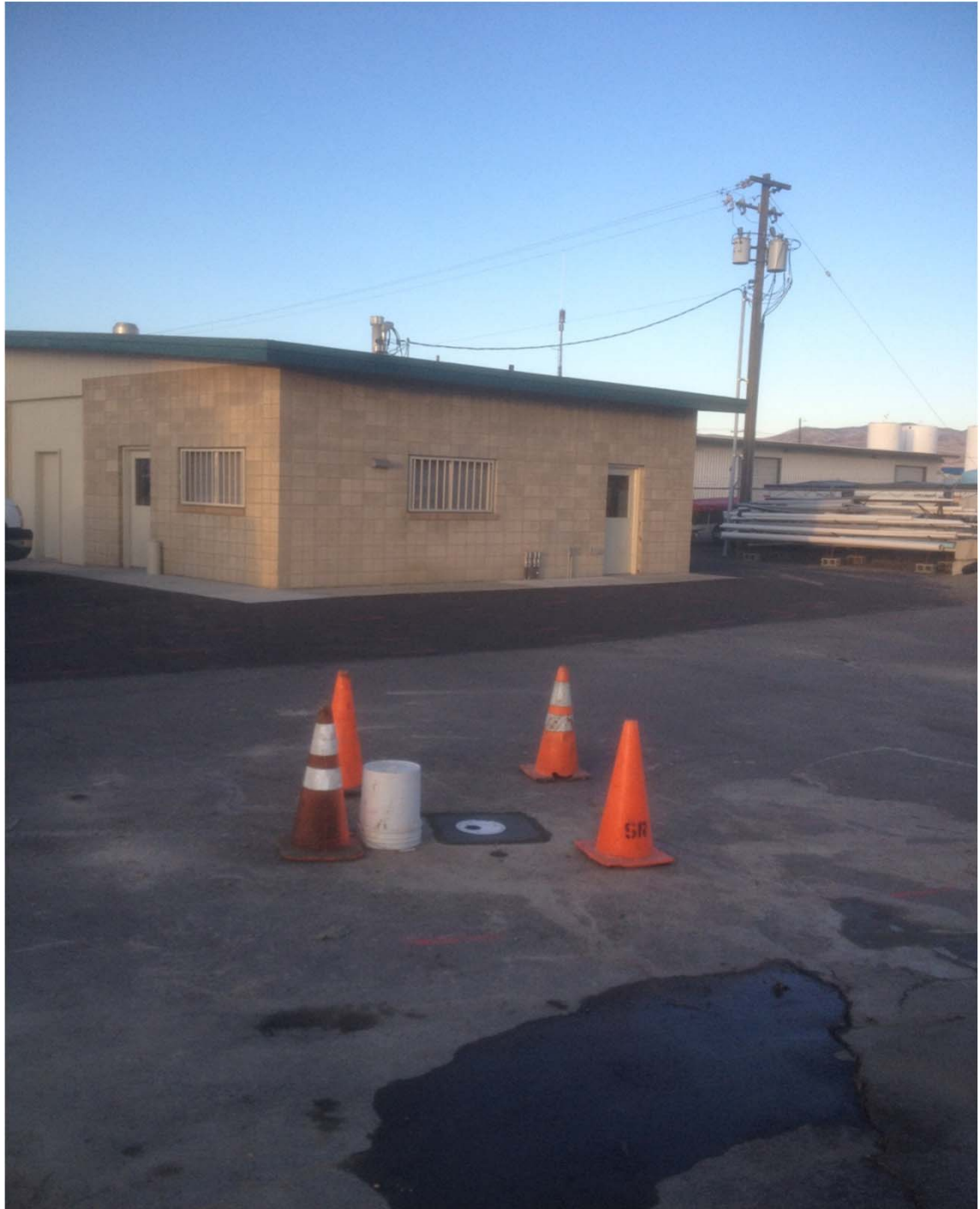
View of south shop building with boring DP-3 in foreground (view to northwest)

Representative Site Photographs

Moxee City Shop and STP
Moxee, Washington



Figure B-2



View of south shop building with monitoring well MW-1 in foreground (view to northeast)

Representative Site Photographs

Moxee City Shop and STP
Moxee, Washington



Figure B-3

The background of the page features a complex contour plot. It consists of numerous irregular, nested blue lines that represent different levels or values. A prominent dashed blue line winds through the plot, starting from the upper left and moving towards the lower right, crossing several of the solid contour lines. The overall appearance is that of a technical or scientific visualization, possibly representing a topographic map or a data distribution.

APPENDIX C
Chemical Analytical Laboratory Reports

APPENDIX C CHEMICAL ANALYTICAL LABORATORY REPORTS

Samples

Chain-of-custody procedures were followed during the transport of the field samples to TestAmerica Laboratories, Inc. located in Spokane, Washington. The samples were held in cold storage pending extraction and/or analysis. The analytical results and quality control records are included in this appendix.

Analytical Data Review

During the groundwater sampling event described herein, a duplicate sample was collected from MW-1 and designated DUP. Gasoline-range petroleum hydrocarbons (GRPH) were detected at concentrations greater than Model Toxics Control Act (MTCA) Method A cleanup levels in both samples. The relative percent differences (RPDs) between the concentrations reported for the primary (X_1) and duplicate (X_2) samples were calculated using the following equation:

$$RPD = \frac{|X_1 - X_2|}{(X_1 + X_2)/2} * 100$$

The resulting RPDs calculated for contaminants of concern are summarized below:

- GRPH – 2.6 percent.
- Benzene – 4.7 percent.
- Ethylbenzene – 0 percent.
- Total xylenes – 0 percent.
- 2-Methylnaphthalene – 2.0 percent.
- 1-Methylnaphthalene – 0.8 percent.
- Naphthalene – 0.1 percent.
- Hexane – 8.8.
- Methyl tertiary-butyl ether (MTBE), toluene, 1,2-dichloroethane (EDC), 1,2-dibromoethane (EDB), and lead were not detected above respective method reporting limits in either the primary or duplicate sample.

RPD goals for this assessment, as specified in the project QAPP, are 30 percent in groundwater, unless the duplicate sample values are within 5 times the reporting limit. Therefore, the RPD values specified above are within acceptable limits.

The laboratory maintains an internal quality assurance/quality control (QA/QC) program as documented in its laboratory quality assurance manual. The laboratory uses a combination of blanks, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries,

blank spike recoveries and blank spike duplicate recoveries to evaluate the analytical results. The laboratory also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The data quality goals were included in the laboratory reports. The laboratory compared each group of samples with the existing data quality goals and noted any exceptions in the laboratory report.

The laboratory compared each group of samples with the existing data quality goals and noted the following exceptions in the laboratory report.

- The concentration of GRPH in laboratory sample 12C0025-MS1 exceeded the calibration range and the laboratory indicated the result is semi-quantitative.
- The percent recovery of C10-C12 Aromatics in laboratory sample 580-31613-1 MSD (69 percent) was below laboratory recovery limits (70 to 130 percent).
- The reporting limit of EDB was raised in sample DP-4(4-4.5) because of sample matrix effects.

Analytical Data Review Summary

We reviewed the laboratory internal quality assurance/quality control (QA/QC) in the context of data quality goals. Based on our review, in our opinion, the quality of the analytical data is acceptable for the intended use.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Spokane
11922 East 1st. Avenue
Spokane, WA 99206
Tel: (509)924-9200

TestAmerica Job ID: SVC0027

Client Project/Site: 0504-078-00

Client Project Description: Moxee City Shop
Revision: 1

For:

Geo Engineers - Spokane
523 East Second Ave.
Spokane, WA 99202

Attn: Jon Rudders



Authorized for release by:
4/13/2012 9:39:33 AM

Randee Decker
Project Manager
Randee.Decker@testamericainc.com

LINKS

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results through
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Visit us at:
www.testamericainc.com

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

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

1

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Chain of Custody	25

Sample Summary

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
SVC0027-03	DP-2 (4.5-5)	Soil	03/01/12 08:48	03/05/12 17:05
SVC0027-04	DP-3 (4-4.5)	Soil	03/01/12 09:00	03/05/12 17:05
SVC0027-05	DP-4 (4-4.5)	Soil	03/01/12 09:30	03/05/12 17:05
SVC0027-07	DP-5 (4-5)	Soil	03/01/12 10:00	03/05/12 17:05
SVC0027-08	DP-6 (4.5-5)	Soil	03/01/12 11:10	03/05/12 17:05
SVC0027-10	MW-1-030112	Water	03/01/12 16:22	03/05/12 17:05
SVC0027-11	Dup	Water	03/01/12 12:34	03/05/12 17:05
SVC0027-13	Trip Blank	Water	02/27/12 00:00	03/05/12 17:05



Definitions/Glossary

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Qualifiers

GCMS Volatiles

Qualifier	Qualifier Description
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
M7	The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS).

Semivolatiles

Qualifier	Qualifier Description
RL1	Reporting limit raised due to sample matrix effects.

GC Semi VOA

Qualifier	Qualifier Description
F	MS or MSD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Client Sample ID: DP-2 (4.5-5)

Lab Sample ID: SVC0027-03

Date Collected: 03/01/12 08:48

Matrix: Soil

Date Received: 03/05/12 17:05

Percent Solids: 76.8

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	ND		7.62		mg/kg dry	☼	03/07/12 09:50	03/07/12 18:42	1.00
Methyl tert-butyl ether	ND		0.0457		mg/kg dry	☼	03/07/12 09:50	03/07/12 18:42	1.00
Benzene	ND		0.0229		mg/kg dry	☼	03/07/12 09:50	03/07/12 18:42	1.00
Ethylbenzene	ND		0.152		mg/kg dry	☼	03/07/12 09:50	03/07/12 18:42	1.00
Toluene	ND		0.152		mg/kg dry	☼	03/07/12 09:50	03/07/12 18:42	1.00
o-Xylene	ND		0.305		mg/kg dry	☼	03/07/12 09:50	03/07/12 18:42	1.00
m,p-Xylene	ND		0.609		mg/kg dry	☼	03/07/12 09:50	03/07/12 18:42	1.00
Naphthalene	ND		0.305		mg/kg dry	☼	03/07/12 09:50	03/07/12 18:42	1.00
1,2-Dichloroethane (EDC)	ND		0.152		mg/kg dry	☼	03/07/12 09:50	03/07/12 18:42	1.00
Xylenes (total)	ND		2.29		mg/kg dry	☼	03/07/12 09:50	03/07/12 18:42	1.00
Hexane	ND		0.152		mg/kg dry	☼	03/07/12 09:50	03/07/12 18:42	1.00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane	112		42.7 - 151	03/07/12 09:50	03/07/12 18:42	1.00
Toluene-d8	110		50.8 - 132	03/07/12 09:50	03/07/12 18:42	1.00
4-bromofluorobenzene	116		51 - 136	03/07/12 09:50	03/07/12 18:42	1.00

Method: EPA 8011 - EDB by EPA Method 8011

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane	ND		1.27		ug/kg dry	☼	03/09/12 13:34	03/12/12 14:58	1.00

Method: EPA 8270 mod. - Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		0.0130		mg/kg dry	☼	03/07/12 08:35	03/07/12 23:16	1.00
1-Methylnaphthalene	ND		0.0130		mg/kg dry	☼	03/07/12 08:35	03/07/12 23:16	1.00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	102		30 - 140	03/07/12 08:35	03/07/12 23:16	1.00
2-FBP	95.2		30 - 140	03/07/12 08:35	03/07/12 23:16	1.00
p-Terphenyl-d14	75.4		30 - 150	03/07/12 08:35	03/07/12 23:16	1.00

Method: EPA 6010C - Total Metals by EPA 6010/7000 Series Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.30		1.78		mg/kg dry	☼	03/09/12 09:35	03/14/12 11:41	1.00

Client Sample ID: DP-3 (4-4.5)

Lab Sample ID: SVC0027-04

Date Collected: 03/01/12 09:00

Matrix: Soil

Date Received: 03/05/12 17:05

Percent Solids: 76.1

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	ND		7.94		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:05	1.00
Methyl tert-butyl ether	ND		0.0476		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:05	1.00
Benzene	ND		0.0238		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:05	1.00
Ethylbenzene	ND		0.159		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:05	1.00
Toluene	ND		0.159		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:05	1.00
o-Xylene	ND		0.317		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:05	1.00
m,p-Xylene	ND		0.635		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:05	1.00
Naphthalene	ND		0.317		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:05	1.00
1,2-Dichloroethane (EDC)	ND		0.159		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:05	1.00
Xylenes (total)	ND		2.38		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:05	1.00
Hexane	ND		0.159		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:05	1.00

Client Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Client Sample ID: DP-3 (4-4.5)

Lab Sample ID: SVC0027-04

Date Collected: 03/01/12 09:00

Matrix: Soil

Date Received: 03/05/12 17:05

Percent Solids: 76.1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane	114		42.7 - 151	03/07/12 09:50	03/07/12 19:05	1.00
Toluene-d8	111		50.8 - 132	03/07/12 09:50	03/07/12 19:05	1.00
4-bromofluorobenzene	111		51 - 136	03/07/12 09:50	03/07/12 19:05	1.00

Method: EPA 8011 - EDB by EPA Method 8011

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane	ND		1.31		ug/kg dry	☼	03/09/12 13:34	03/12/12 15:10	1.00

Method: EPA 8270 mod. - Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		0.0129		mg/kg dry	☼	03/07/12 08:35	03/07/12 23:41	1.00
1-Methylnaphthalene	ND		0.0129		mg/kg dry	☼	03/07/12 08:35	03/07/12 23:41	1.00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	102		30 - 140	03/07/12 08:35	03/07/12 23:41	1.00
2-FBP	97.4		30 - 140	03/07/12 08:35	03/07/12 23:41	1.00
p-Terphenyl-d14	116		30 - 150	03/07/12 08:35	03/07/12 23:41	1.00

Method: EPA 6010C - Total Metals by EPA 6010/7000 Series Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.18		1.93		mg/kg dry	☼	03/09/12 09:35	03/14/12 11:45	1.00

Client Sample ID: DP-4 (4-4.5)

Lab Sample ID: SVC0027-05

Date Collected: 03/01/12 09:30

Matrix: Soil

Date Received: 03/05/12 17:05

Percent Solids: 81.2

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	37.9		7.09		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:28	1.00
Methyl tert-butyl ether	ND		0.0425		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:28	1.00
Benzene	ND		0.0213		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:28	1.00
Ethylbenzene	ND		0.142		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:28	1.00
Toluene	ND		0.142		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:28	1.00
o-Xylene	ND		0.284		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:28	1.00
m,p-Xylene	ND		0.567		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:28	1.00
Naphthalene	ND		0.284		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:28	1.00
1,2-Dichloroethane (EDC)	ND		0.142		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:28	1.00
Xylenes (total)	ND		2.13		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:28	1.00
Hexane	ND		0.142		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:28	1.00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane	112		42.7 - 151	03/07/12 09:50	03/07/12 19:28	1.00
Toluene-d8	109		50.8 - 132	03/07/12 09:50	03/07/12 19:28	1.00
4-bromofluorobenzene	114		51 - 136	03/07/12 09:50	03/07/12 19:28	1.00

Method: EPA 8011 - EDB by EPA Method 8011

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane	ND	RL1	12.0		ug/kg dry	☼	03/09/12 13:34	03/12/12 15:22	10.0

Method: EPA 8270 mod. - Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	0.0289		0.0121		mg/kg dry	☼	03/07/12 08:35	03/08/12 16:32	1.00
1-Methylnaphthalene	0.0185		0.0121		mg/kg dry	☼	03/07/12 08:35	03/08/12 16:32	1.00

Client Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Client Sample ID: DP-4 (4-4.5)

Lab Sample ID: SVC0027-05

Date Collected: 03/01/12 09:30

Matrix: Soil

Date Received: 03/05/12 17:05

Percent Solids: 81.2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	65.4		30 - 140	03/07/12 08:35	03/08/12 16:32	1.00
2-FBP	59.4		30 - 140	03/07/12 08:35	03/08/12 16:32	1.00
p-Terphenyl-d14	46.2		30 - 150	03/07/12 08:35	03/08/12 16:32	1.00

Method: NWTPH/VPH - Northwest - Volatile Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C5-C6 Aliphatics	ND		2.2		mg/Kg	☼	03/09/12 11:21	03/13/12 13:00	1
C6-C8 Aliphatics	2.4		2.2		mg/Kg	☼	03/09/12 11:21	03/13/12 13:00	1
C10-C12 Aliphatics	3.8		2.2		mg/Kg	☼	03/09/12 11:21	03/13/12 13:00	1
C8-C10 Aromatics	2.3		2.2		mg/Kg	☼	03/09/12 11:21	03/13/12 13:00	1
C8-C10 Aliphatics	2.3		2.2		mg/Kg	☼	03/09/12 11:21	03/13/12 13:00	1
C10-C12 Aromatics	6.0		2.2		mg/Kg	☼	03/09/12 11:21	03/13/12 13:00	1
Total VPH	19		15		mg/Kg	☼	03/09/12 11:21	03/13/12 13:00	1
C12-C13 Aromatics	ND		2.2		mg/Kg	☼	03/09/12 11:21	03/13/12 13:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	107		60 - 140	03/09/12 11:21	03/13/12 13:00	1
BFB - PID	99		60 - 140	03/09/12 11:21	03/13/12 13:00	1

Method: NWTPH/EPH - Northwest - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C21-C34 Aliphatics	39		24		mg/Kg	☼	03/13/12 15:49	03/19/12 22:53	1
C16-C21 Aliphatics	ND		24		mg/Kg	☼	03/13/12 15:49	03/19/12 22:53	1
C12-C16 Aromatics	ND		24		mg/Kg	☼	03/13/12 15:49	03/19/12 22:53	1
C10-C12 Aliphatics	ND		24		mg/Kg	☼	03/13/12 15:49	03/19/12 22:53	1
C10-C12 Aromatics	ND		24		mg/Kg	☼	03/13/12 15:49	03/19/12 22:53	1
C12-C16 Aliphatics	ND		24		mg/Kg	☼	03/13/12 15:49	03/19/12 22:53	1
C21-C34 Aromatics	59		24		mg/Kg	☼	03/13/12 15:49	03/19/12 22:53	1
C16-C21 Aromatics	ND		24		mg/Kg	☼	03/13/12 15:49	03/19/12 22:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	96		60 - 140	03/13/12 15:49	03/19/12 22:53	1
1-Chlorooctadecane	84		60 - 140	03/13/12 15:49	03/19/12 22:53	1

Method: EPA 6010C - Total Metals by EPA 6010/7000 Series Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.53		1.63		mg/kg dry	☼	03/09/12 09:35	03/14/12 11:49	1.00

Client Sample ID: DP-5 (4-5)

Lab Sample ID: SVC0027-07

Date Collected: 03/01/12 10:00

Matrix: Soil

Date Received: 03/05/12 17:05

Percent Solids: 77.3

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	ND		7.48		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:51	1.00
Methyl tert-butyl ether	ND		0.0449		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:51	1.00
Benzene	ND		0.0224		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:51	1.00
Ethylbenzene	ND		0.150		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:51	1.00
Toluene	ND		0.150		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:51	1.00
o-Xylene	ND		0.299		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:51	1.00
m,p-Xylene	ND		0.598		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:51	1.00
Naphthalene	ND		0.299		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:51	1.00
1,2-Dichloroethane (EDC)	ND		0.150		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:51	1.00

Client Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Client Sample ID: DP-5 (4-5)

Lab Sample ID: SVC0027-07

Date Collected: 03/01/12 10:00

Matrix: Soil

Date Received: 03/05/12 17:05

Percent Solids: 77.3

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes (total)	ND		2.24		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:51	1.00
Hexane	ND		0.150		mg/kg dry	☼	03/07/12 09:50	03/07/12 19:51	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	114		42.7 - 151				03/07/12 09:50	03/07/12 19:51	1.00
Toluene-d8	109		50.8 - 132				03/07/12 09:50	03/07/12 19:51	1.00
4-bromofluorobenzene	113		51 - 136				03/07/12 09:50	03/07/12 19:51	1.00

Method: EPA 8011 - EDB by EPA Method 8011

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane	ND		1.19		ug/kg dry	☼	03/09/12 13:34	03/12/12 15:35	1.00

Method: EPA 8270 mod. - Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		0.0127		mg/kg dry	☼	03/07/12 08:35	03/08/12 00:32	1.00
1-Methylnaphthalene	ND		0.0127		mg/kg dry	☼	03/07/12 08:35	03/08/12 00:32	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	108		30 - 140				03/07/12 08:35	03/08/12 00:32	1.00
2-FBP	101		30 - 140				03/07/12 08:35	03/08/12 00:32	1.00
p-Terphenyl-d14	96.4		30 - 150				03/07/12 08:35	03/08/12 00:32	1.00

Method: EPA 6010C - Total Metals by EPA 6010/7000 Series Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.95		2.06		mg/kg dry	☼	03/09/12 09:35	03/14/12 11:52	1.00

Client Sample ID: DP-6 (4.5-5)

Lab Sample ID: SVC0027-08

Date Collected: 03/01/12 11:10

Matrix: Soil

Date Received: 03/05/12 17:05

Percent Solids: 77

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	ND		7.74		mg/kg dry	☼	03/07/12 09:50	03/07/12 20:15	1.00
Methyl tert-butyl ether	ND		0.0464		mg/kg dry	☼	03/07/12 09:50	03/07/12 20:15	1.00
Benzene	ND		0.0232		mg/kg dry	☼	03/07/12 09:50	03/07/12 20:15	1.00
Ethylbenzene	ND		0.155		mg/kg dry	☼	03/07/12 09:50	03/07/12 20:15	1.00
Toluene	ND		0.155		mg/kg dry	☼	03/07/12 09:50	03/07/12 20:15	1.00
o-Xylene	ND		0.309		mg/kg dry	☼	03/07/12 09:50	03/07/12 20:15	1.00
m,p-Xylene	ND		0.619		mg/kg dry	☼	03/07/12 09:50	03/07/12 20:15	1.00
Naphthalene	ND		0.309		mg/kg dry	☼	03/07/12 09:50	03/07/12 20:15	1.00
1,2-Dichloroethane (EDC)	ND		0.155		mg/kg dry	☼	03/07/12 09:50	03/07/12 20:15	1.00
Xylenes (total)	ND		2.32		mg/kg dry	☼	03/07/12 09:50	03/07/12 20:15	1.00
Hexane	ND		0.155		mg/kg dry	☼	03/07/12 09:50	03/07/12 20:15	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	110		42.7 - 151				03/07/12 09:50	03/07/12 20:15	1.00
Toluene-d8	110		50.8 - 132				03/07/12 09:50	03/07/12 20:15	1.00
4-bromofluorobenzene	109		51 - 136				03/07/12 09:50	03/07/12 20:15	1.00

Method: EPA 8011 - EDB by EPA Method 8011

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane	ND		1.28		ug/kg dry	☼	03/09/12 13:34	03/12/12 16:46	1.00

Client Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Client Sample ID: DP-6 (4.5-5)

Lab Sample ID: SVC0027-08

Date Collected: 03/01/12 11:10

Matrix: Soil

Date Received: 03/05/12 17:05

Percent Solids: 77

Method: EPA 8270 mod. - Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		0.0126		mg/kg dry	☼	03/07/12 08:35	03/08/12 00:57	1.00
1-Methylnaphthalene	ND		0.0126		mg/kg dry	☼	03/07/12 08:35	03/08/12 00:57	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	98.8		30 - 140				03/07/12 08:35	03/08/12 00:57	1.00
2-FBP	91.2		30 - 140				03/07/12 08:35	03/08/12 00:57	1.00
p-Terphenyl-d14	121		30 - 150				03/07/12 08:35	03/08/12 00:57	1.00

Method: EPA 6010C - Total Metals by EPA 6010/7000 Series Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	7.24		1.91		mg/kg dry	☼	03/09/12 09:35	03/14/12 11:56	1.00

Client Sample ID: MW-1-030112

Lab Sample ID: SVC0027-10

Date Collected: 03/01/12 16:22

Matrix: Water

Date Received: 03/05/12 17:05

Method: EPA 8260C - NWTPh-Gx and Volatile Organic Compounds by EPA Method 8260C

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	1550		100		ug/l		03/08/12 09:15	03/08/12 13:45	1.00
Methyl tert-butyl ether	ND		0.500		ug/l		03/08/12 09:15	03/08/12 13:45	1.00
Benzene	0.210		0.200		ug/l		03/08/12 09:15	03/08/12 13:45	1.00
Toluene	ND		0.500		ug/l		03/08/12 09:15	03/08/12 13:45	1.00
Ethylbenzene	80.9		0.500		ug/l		03/08/12 09:15	03/08/12 13:45	1.00
m,p-Xylene	8.29		0.500		ug/l		03/08/12 09:15	03/08/12 13:45	1.00
o-Xylene	2.83		0.500		ug/l		03/08/12 09:15	03/08/12 13:45	1.00
Naphthalene	9.32		2.00		ug/l		03/08/12 09:15	03/08/12 13:45	1.00
1,2-Dichloroethane (EDC)	ND		0.500		ug/l		03/08/12 09:15	03/08/12 13:45	1.00
Xylenes (total)	11.1		1.50		ug/l		03/08/12 09:15	03/08/12 13:45	1.00
Hexane	1.30		1.00		ug/l		03/08/12 09:15	03/08/12 13:45	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	112		66.5 - 145				03/08/12 09:15	03/08/12 13:45	1.00
Toluene-d8	114		75.4 - 120				03/08/12 09:15	03/08/12 13:45	1.00
4-bromofluorobenzene	112		68.4 - 123				03/08/12 09:15	03/08/12 13:45	1.00

Method: EPA 8011 - EDB by EPA Method 8011

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane	ND		0.0100		ug/l		03/08/12 15:15	03/08/12 17:38	1.00
1,2-Dibromo-3-chloropropane	ND		0.0100		ug/l		03/08/12 15:15	03/08/12 17:38	1.00

Method: EPA 8270 mod. - Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	0.495		0.202		ug/l		03/08/12 09:31	03/08/12 14:37	1.00
1-Methylnaphthalene	4.74		0.202		ug/l		03/08/12 09:31	03/08/12 14:37	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	80.5		30 - 150				03/08/12 09:31	03/08/12 14:37	1.00
2-FBP	71.6		21 - 122				03/08/12 09:31	03/08/12 14:37	1.00
p-Terphenyl-d14	66.2		35 - 150				03/08/12 09:31	03/08/12 14:37	1.00

Method: EPA 6010C - Total Metals by EPA 6010/7000 Series Methods - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0300	0.0100	mg/l		03/09/12 09:35	03/20/12 16:42	1.00

Client Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Client Sample ID: Dup

Lab Sample ID: SVC0027-11

Date Collected: 03/01/12 12:34

Matrix: Water

Date Received: 03/05/12 17:05

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	1510		100		ug/l		03/08/12 09:15	03/08/12 14:08	1.00
Methyl tert-butyl ether	ND		0.500		ug/l		03/08/12 09:15	03/08/12 14:08	1.00
Benzene	0.220		0.200		ug/l		03/08/12 09:15	03/08/12 14:08	1.00
Toluene	ND		0.500		ug/l		03/08/12 09:15	03/08/12 14:08	1.00
Ethylbenzene	80.9		0.500		ug/l		03/08/12 09:15	03/08/12 14:08	1.00
m,p-Xylene	8.32		0.500		ug/l		03/08/12 09:15	03/08/12 14:08	1.00
o-Xylene	2.82		0.500		ug/l		03/08/12 09:15	03/08/12 14:08	1.00
Naphthalene	9.27		2.00		ug/l		03/08/12 09:15	03/08/12 14:08	1.00
1,2-Dichloroethane (EDC)	ND		0.500		ug/l		03/08/12 09:15	03/08/12 14:08	1.00
Xylenes (total)	11.1		1.50		ug/l		03/08/12 09:15	03/08/12 14:08	1.00
Hexane	1.42		1.00		ug/l		03/08/12 09:15	03/08/12 14:08	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	114		66.5 - 145				03/08/12 09:15	03/08/12 14:08	1.00
Toluene-d8	115		75.4 - 120				03/08/12 09:15	03/08/12 14:08	1.00
4-bromofluorobenzene	112		68.4 - 123				03/08/12 09:15	03/08/12 14:08	1.00

Method: EPA 8011 - EDB by EPA Method 8011

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane	ND		0.0100		ug/l		03/08/12 15:15	03/08/12 17:50	1.00
1,2-Dibromo-3-chloropropane	ND		0.0100		ug/l		03/08/12 15:15	03/08/12 17:50	1.00

Method: EPA 8270 mod. - Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	0.505		0.202		ug/l		03/08/12 09:31	03/08/12 15:03	1.00
1-Methylnaphthalene	4.78		0.202		ug/l		03/08/12 09:31	03/08/12 15:03	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	80.9		30 - 150				03/08/12 09:31	03/08/12 15:03	1.00
2-FBP	75.7		21 - 122				03/08/12 09:31	03/08/12 15:03	1.00
p-Terphenyl-d14	87.5		35 - 150				03/08/12 09:31	03/08/12 15:03	1.00

Method: EPA 6010C - Total Metals by EPA 6010/7000 Series Methods - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0300	0.0100	mg/l		03/09/12 09:35	03/20/12 16:53	1.00

Client Sample ID: Trip Blank

Lab Sample ID: SVC0027-13

Date Collected: 02/27/12 00:00

Matrix: Water

Date Received: 03/05/12 17:05

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	ND		100		ug/l		03/08/12 09:15	03/08/12 14:31	1.00
Methyl tert-butyl ether	ND		0.500		ug/l		03/08/12 09:15	03/08/12 14:31	1.00
Benzene	ND		0.200		ug/l		03/08/12 09:15	03/08/12 14:31	1.00
Toluene	ND		0.500		ug/l		03/08/12 09:15	03/08/12 14:31	1.00
Ethylbenzene	ND		0.500		ug/l		03/08/12 09:15	03/08/12 14:31	1.00
m,p-Xylene	ND		0.500		ug/l		03/08/12 09:15	03/08/12 14:31	1.00
o-Xylene	ND		0.500		ug/l		03/08/12 09:15	03/08/12 14:31	1.00
Naphthalene	ND		2.00		ug/l		03/08/12 09:15	03/08/12 14:31	1.00
1,2-Dichloroethane (EDC)	ND		0.500		ug/l		03/08/12 09:15	03/08/12 14:31	1.00
Xylenes (total)	ND		1.50		ug/l		03/08/12 09:15	03/08/12 14:31	1.00

Client Sample Results

Client: Geo Engineers - Spokane
 Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Client Sample ID: Trip Blank

Lab Sample ID: SVC0027-13

Date Collected: 02/27/12 00:00

Matrix: Water

Date Received: 03/05/12 17:05

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexane	ND		1.00		ug/l		03/08/12 09:15	03/08/12 14:31	1.00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane	113		66.5 - 145	03/08/12 09:15	03/08/12 14:31	1.00
Toluene-d8	111		75.4 - 120	03/08/12 09:15	03/08/12 14:31	1.00
4-bromofluorobenzene	114		68.4 - 123	03/08/12 09:15	03/08/12 14:31	1.00



QC Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C

Lab Sample ID: 12C0025-BLK1

Matrix: Soil

Analysis Batch: 12C0025

Client Sample ID: Method Blank

Prep Type: Total

Prep Batch: 12C0025_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	ND		5.00		mg/kg wet		03/07/12 09:50	03/07/12 12:54	1.00
Methyl tert-butyl ether	ND		0.0300		mg/kg wet		03/07/12 09:50	03/07/12 12:54	1.00
Benzene	ND		0.00500		mg/kg wet		03/07/12 09:50	03/07/12 12:54	1.00
Ethylbenzene	ND		0.100		mg/kg wet		03/07/12 09:50	03/07/12 12:54	1.00
Toluene	ND		0.100		mg/kg wet		03/07/12 09:50	03/07/12 12:54	1.00
o-Xylene	ND		0.200		mg/kg wet		03/07/12 09:50	03/07/12 12:54	1.00
m,p-Xylene	ND		0.400		mg/kg wet		03/07/12 09:50	03/07/12 12:54	1.00
Naphthalene	ND		0.200		mg/kg wet		03/07/12 09:50	03/07/12 12:54	1.00
1,2-Dichloroethane (EDC)	ND		0.100		mg/kg wet		03/07/12 09:50	03/07/12 12:54	1.00
Xylenes (total)	ND		1.50		mg/kg wet		03/07/12 09:50	03/07/12 12:54	1.00
Hexane	ND		0.100		mg/kg wet		03/07/12 09:50	03/07/12 12:54	1.00

Surrogate	Blank %Recovery	Blank Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane	113		42.7 - 151	03/07/12 09:50	03/07/12 12:54	1.00
Toluene-d8	110		50.8 - 132	03/07/12 09:50	03/07/12 12:54	1.00
4-bromofluorobenzene	108		51 - 136	03/07/12 09:50	03/07/12 12:54	1.00

Lab Sample ID: 12C0025-BS1

Matrix: Soil

Analysis Batch: 12C0025

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 12C0025_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Gasoline Range Hydrocarbons	50.0	48.6		mg/kg wet		97.2	74.4 - 124

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane	93.6		42.7 - 151
Toluene-d8	95.0		50.8 - 132
4-bromofluorobenzene	91.8		51 - 136

Lab Sample ID: 12C0025-BS2

Matrix: Soil

Analysis Batch: 12C0025

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 12C0025_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Methyl tert-butyl ether	0.500	0.524		mg/kg wet		105	50 - 150
Benzene	0.500	0.478		mg/kg wet		95.7	50 - 150
Ethylbenzene	0.500	0.487		mg/kg wet		97.4	50 - 150
Toluene	0.500	0.499		mg/kg wet		99.8	50 - 150
o-Xylene	0.500	0.496		mg/kg wet		99.2	50 - 150
m,p-Xylene	1.00	1.02		mg/kg wet		102	50 - 150
Naphthalene	0.500	0.535		mg/kg wet		107	50 - 150
Xylenes (total)	1.50	1.51		mg/kg wet		101	50 - 150
Hexane	0.500	0.526		mg/kg wet		105	50 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane	112		42.7 - 151
Toluene-d8	113		50.8 - 132
4-bromofluorobenzene	111		51 - 136

QC Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C

(Continued)

Lab Sample ID: 12C0025-MS1

Matrix: Soil

Analysis Batch: 12C0025

Client Sample ID: Matrix Spike

Prep Type: Total

Prep Batch: 12C0025_P

Analyte	Sample	Sample	Spike	Matrix Spike	Matrix Spike	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Gasoline Range Hydrocarbons	286		62.6	420	E M7	mg/kg dry	☼	214	50 - 133	
Surrogate	Matrix Spike	Matrix Spike	Limits							
	%Recovery	Qualifier								
Dibromofluoromethane	91.4		42.7 - 151							
Toluene-d8	96.4		50.8 - 132							
4-bromofluorobenzene	124		51 - 136							

Lab Sample ID: 12C0025-MS2

Matrix: Soil

Analysis Batch: 12C0025

Client Sample ID: Matrix Spike

Prep Type: Total

Prep Batch: 12C0025_P

Analyte	Sample	Sample	Spike	Matrix Spike	Matrix Spike	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Methyl tert-butyl ether	ND		0.759	1.05		mg/kg dry	☼	138	50 - 150	
Benzene	ND		0.759	0.970		mg/kg dry	☼	128	50 - 150	
Ethylbenzene	ND		0.759	0.979		mg/kg dry	☼	129	50 - 150	
Toluene	ND		0.759	1.01		mg/kg dry	☼	134	50 - 150	
o-Xylene	ND		0.759	0.980		mg/kg dry	☼	129	50 - 150	
m,p-Xylene	ND		1.52	2.03		mg/kg dry	☼	134	50 - 150	
Naphthalene	ND		0.759	1.06		mg/kg dry	☼	139	50 - 150	
Xylenes (total)	ND		2.28	3.01		mg/kg dry	☼	132	50 - 150	
Surrogate	Matrix Spike	Matrix Spike	Limits							
	%Recovery	Qualifier								
Dibromofluoromethane	110		42.7 - 151							
Toluene-d8	112		50.8 - 132							
4-bromofluorobenzene	114		51 - 136							

Lab Sample ID: 12C0025-DUP1

Matrix: Soil

Analysis Batch: 12C0025

Client Sample ID: DP-6 (4.5-5)

Prep Type: Total

Prep Batch: 12C0025_P

Analyte	Sample	Sample	Duplicate	Duplicate	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Gasoline Range Hydrocarbons	ND		ND		mg/kg dry	☼		32.3
Methyl tert-butyl ether	ND		ND		mg/kg dry	☼		20
Benzene	ND		ND		mg/kg dry	☼		20
Ethylbenzene	ND		ND		mg/kg dry	☼		20
Toluene	ND		ND		mg/kg dry	☼		20
o-Xylene	ND		ND		mg/kg dry	☼		20
m,p-Xylene	ND		ND		mg/kg dry	☼		20
Naphthalene	ND		ND		mg/kg dry	☼		20
Xylenes (total)	ND		ND		mg/kg dry	☼		20
Hexane	ND		ND		mg/kg dry	☼		20
Surrogate	Duplicate	Duplicate	Limits					
	%Recovery	Qualifier						
Dibromofluoromethane	109		42.7 - 151					
Toluene-d8	109		50.8 - 132					
4-bromofluorobenzene	109		51 - 136					

QC Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C

(Continued)

Lab Sample ID: 12C0028-BLK1

Matrix: Water

Analysis Batch: 12C0028

Client Sample ID: Method Blank

Prep Type: Total

Prep Batch: 12C0028_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Hydrocarbons	ND		100		ug/l		03/08/12 09:15	03/08/12 12:35	1.00
Methyl tert-butyl ether	ND		0.500		ug/l		03/08/12 09:15	03/08/12 12:35	1.00
Benzene	ND		0.200		ug/l		03/08/12 09:15	03/08/12 12:35	1.00
Toluene	ND		0.500		ug/l		03/08/12 09:15	03/08/12 12:35	1.00
Ethylbenzene	ND		0.500		ug/l		03/08/12 09:15	03/08/12 12:35	1.00
m,p-Xylene	ND		0.500		ug/l		03/08/12 09:15	03/08/12 12:35	1.00
o-Xylene	ND		0.500		ug/l		03/08/12 09:15	03/08/12 12:35	1.00
Xylenes (total)	ND		1.50		ug/l		03/08/12 09:15	03/08/12 12:35	1.00

Surrogate	Blank %Recovery	Blank Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane	113		66.5 - 145	03/08/12 09:15	03/08/12 12:35	1.00
Toluene-d8	112		75.4 - 120	03/08/12 09:15	03/08/12 12:35	1.00
4-bromofluorobenzene	115		68.4 - 123	03/08/12 09:15	03/08/12 12:35	1.00

Lab Sample ID: 12C0028-BS1

Matrix: Water

Analysis Batch: 12C0028

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 12C0028_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Hydrocarbons	1000	914		ug/l		91.4	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane	94.6		66.5 - 145
Toluene-d8	95.6		75.4 - 120
4-bromofluorobenzene	94.0		68.4 - 123

Lab Sample ID: 12C0028-BS2

Matrix: Water

Analysis Batch: 12C0028

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 12C0028_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl tert-butyl ether	10.0	10.4		ug/l		104	47.6 - 150
Benzene	10.0	10.3		ug/l		103	72.9 - 120
Toluene	10.0	10.7		ug/l		107	72.4 - 132
Ethylbenzene	10.0	10.3		ug/l		103	79.5 - 124
m,p-Xylene	20.0	20.9		ug/l		104	79.6 - 133
o-Xylene	10.0	10.4		ug/l		104	80 - 120
Xylenes (total)	30.0	31.3		ug/l		104	80 - 121

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane	114		66.5 - 145
Toluene-d8	111		75.4 - 120
4-bromofluorobenzene	111		68.4 - 123

QC Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C

(Continued)

Lab Sample ID: 12C0028-BS3

Matrix: Water

Analysis Batch: 12C0028

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 12C0028_P

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Dibromofluoromethane	105		66.5 - 145
Toluene-d8	101		75.4 - 120
4-bromofluorobenzene	99.2		68.4 - 123

Lab Sample ID: 12C0028-MS1

Matrix: Water

Analysis Batch: 12C0028

Client Sample ID: Matrix Spike

Prep Type: Total

Prep Batch: 12C0028_P

Analyte	Sample	Sample	Spike	Matrix Spike	Matrix Spike	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				
Gasoline Range Hydrocarbons	ND		1000	873		ug/l		87.3	55.6 - 126
Surrogate	%Recovery	Qualifier	Limits						
Dibromofluoromethane	89.6		66.5 - 145						
Toluene-d8	92.2		75.4 - 120						
4-bromofluorobenzene	85.0		68.4 - 123						

Lab Sample ID: 12C0028-MS2

Matrix: Water

Analysis Batch: 12C0028

Client Sample ID: Matrix Spike

Prep Type: Total

Prep Batch: 12C0028_P

Analyte	Sample	Sample	Spike	Matrix Spike	Matrix Spike	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				
Methyl tert-butyl ether	0.210		10.0	10.4		ug/l		102	44.3 - 150
Benzene	ND		10.0	9.86		ug/l		98.6	72.3 - 120
Toluene	ND		10.0	10.1		ug/l		101	62.7 - 137
Ethylbenzene	ND		10.0	9.58		ug/l		95.8	71.2 - 128
m,p-Xylene	ND		20.0	19.9		ug/l		99.4	70 - 134
o-Xylene	ND		10.0	9.93		ug/l		99.3	78.5 - 120
Xylenes (total)	ND		30.0	29.8		ug/l		99.3	80 - 130
Surrogate	%Recovery	Qualifier	Limits						
Dibromofluoromethane	111		66.5 - 145						
Toluene-d8	114		75.4 - 120						
4-bromofluorobenzene	112		68.4 - 123						

Lab Sample ID: 12C0028-DUP1

Matrix: Water

Analysis Batch: 12C0028

Client Sample ID: Duplicate

Prep Type: Total

Prep Batch: 12C0028_P

Analyte	Sample	Sample	Duplicate	Duplicate	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Gasoline Range Hydrocarbons	ND		ND		ug/l			35
Methyl tert-butyl ether	0.700		0.640		ug/l		8.96	20
Benzene	ND		ND		ug/l			20
Toluene	ND		ND		ug/l			20
Ethylbenzene	ND		ND		ug/l			20
m,p-Xylene	0.140		0.130		ug/l		7.41	20
o-Xylene	0.110		ND		ug/l			20
Xylenes (total)	ND		ND		ug/l			20

QC Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Method: EPA 8260C - NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C

(Continued)

Lab Sample ID: 12C0028-DUP1

Matrix: Water

Analysis Batch: 12C0028

Client Sample ID: Duplicate

Prep Type: Total

Prep Batch: 12C0028_P

Surrogate	Duplicate %Recovery	Duplicate Qualifier	Limits
Dibromofluoromethane	111		66.5 - 145
Toluene-d8	110		75.4 - 120
4-bromofluorobenzene	107		68.4 - 123

Method: EPA 8011 - EDB by EPA Method 8011

Lab Sample ID: 12C0035-BLK1

Matrix: Water

Analysis Batch: 12C0035

Client Sample ID: Method Blank

Prep Type: Total

Prep Batch: 12C0035_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane	ND		0.0100		ug/l		03/08/12 15:15	03/08/12 17:14	1.00
1,2-Dibromo-3-chloropropane	ND		0.0100		ug/l		03/08/12 15:15	03/08/12 17:14	1.00

Lab Sample ID: 12C0035-BS1

Matrix: Water

Analysis Batch: 12C0035

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 12C0035_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	%Rec.
1,2-Dibromoethane	0.125	0.171		ug/l		137	60 - 140	
1,2-Dibromo-3-chloropropane	0.125	0.151		ug/l		121	60 - 140	

Lab Sample ID: 12C0035-BS2

Matrix: Water

Analysis Batch: 12C0035

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 12C0035_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	%Rec.
1,2-Dibromoethane	0.125	0.173		ug/l		139	60 - 140	
1,2-Dibromo-3-chloropropane	0.125	0.143		ug/l		115	60 - 140	

Lab Sample ID: 12C0044-BLK1

Matrix: Soil

Analysis Batch: 12C0044

Client Sample ID: Method Blank

Prep Type: Total

Prep Batch: 12C0044_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane	ND		1.00		ug/kg wet		03/09/12 13:34	03/12/12 11:13	1.00

Lab Sample ID: 12C0044-BS1

Matrix: Soil

Analysis Batch: 12C0044

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 12C0044_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	%Rec.
1,2-Dibromoethane	5.00	5.66		ug/kg wet		113	60 - 140	

QC Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Method: EPA 8011 - EDB by EPA Method 8011 (Continued)

Lab Sample ID: 12C0044-BS2
Matrix: Soil
Analysis Batch: 12C0044

Client Sample ID: Lab Control Sample
Prep Type: Total
Prep Batch: 12C0044_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2-Dibromoethane	5.00	5.76		ug/kg wet		115	60 - 140

Lab Sample ID: 12C0044-MS1
Matrix: Soil
Analysis Batch: 12C0044

Client Sample ID: Matrix Spike
Prep Type: Total
Prep Batch: 12C0044_P

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	Limits
1,2-Dibromoethane	ND		6.08	6.90		ug/kg dry	☼	113	60 - 140

Lab Sample ID: 12C0044-MSD1
Matrix: Soil
Analysis Batch: 12C0044

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total
Prep Batch: 12C0044_P

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2-Dibromoethane	ND		6.10	6.57		ug/kg dry	☼	108	60 - 140	4.91	20

Method: EPA 8270 mod. - Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring

Lab Sample ID: 12C0024-BLK1
Matrix: Soil
Analysis Batch: 12C0024

Client Sample ID: Method Blank
Prep Type: Total
Prep Batch: 12C0024_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0100		mg/kg wet		03/07/12 08:35	03/07/12 16:32	1.00
2-Methylnaphthalene	ND		0.0100		mg/kg wet		03/07/12 08:35	03/07/12 16:32	1.00
1-Methylnaphthalene	ND		0.0100		mg/kg wet		03/07/12 08:35	03/07/12 16:32	1.00

Surrogate	Blank %Recovery	Blank Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	118		30 - 140	03/07/12 08:35	03/07/12 16:32	1.00
2-FBP	104		30 - 140	03/07/12 08:35	03/07/12 16:32	1.00
p-Terphenyl-d14	81.0		30 - 150	03/07/12 08:35	03/07/12 16:32	1.00

Lab Sample ID: 12C0024-BS1
Matrix: Soil
Analysis Batch: 12C0024

Client Sample ID: Lab Control Sample
Prep Type: Total
Prep Batch: 12C0024_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Naphthalene	0.133	0.103		mg/kg wet		77.5	40 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	111		30 - 140
2-FBP	103		30 - 140
p-Terphenyl-d14	111		30 - 150

QC Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Method: EPA 8270 mod. - Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring (Continued)

Lab Sample ID: 12C0024-MS1

Matrix: Soil

Analysis Batch: 12C0024

Client Sample ID: Matrix Spike

Prep Type: Total

Prep Batch: 12C0024_P

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	Limits
Naphthalene	0.00480		0.158	0.122		mg/kg dry	☼	74.0	30 - 120
Surrogate	Matrix Spike %Recovery	Matrix Spike Qualifier	Limits						
Nitrobenzene-d5	114		30 - 140						
2-FBP	93.6		30 - 140						
p-Terphenyl-d14	63.0		30 - 150						

Lab Sample ID: 12C0024-MSD1

Matrix: Soil

Analysis Batch: 12C0024

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total

Prep Batch: 12C0024_P

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Naphthalene	0.00480		0.164	0.128		mg/kg dry	☼	75.1	30 - 120	5.11	35
Surrogate	Matrix Spike Dup %Recovery	Matrix Spike Dup Qualifier	Limits								
Nitrobenzene-d5	116		30 - 140								
2-FBP	91.2		30 - 140								
p-Terphenyl-d14	71.2		30 - 150								

Lab Sample ID: 12C0029-BLK1

Matrix: Water

Analysis Batch: 12C0029

Client Sample ID: Method Blank

Prep Type: Total

Prep Batch: 12C0029_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.100		ug/l		03/08/12 09:31	03/08/12 13:47	1.00
2-Methylnaphthalene	ND		0.100		ug/l		03/08/12 09:31	03/08/12 13:47	1.00
1-Methylnaphthalene	ND		0.100		ug/l		03/08/12 09:31	03/08/12 13:47	1.00
Surrogate	Blank %Recovery	Blank Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	115		30 - 150				03/08/12 09:31	03/08/12 13:47	1.00
2-FBP	103		21 - 122				03/08/12 09:31	03/08/12 13:47	1.00
p-Terphenyl-d14	63.1		35 - 150				03/08/12 09:31	03/08/12 13:47	1.00

Lab Sample ID: 12C0029-BS1

Matrix: Water

Analysis Batch: 12C0029

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 12C0029_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Naphthalene	2.00	1.60		ug/l		79.8	40 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
Nitrobenzene-d5	117		30 - 150				
2-FBP	110		21 - 122				
p-Terphenyl-d14	63.7		35 - 150				

QC Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Method: NWTPH/VPH - Northwest - Volatile Petroleum Hydrocarbons (GC)

Lab Sample ID: MB 580-106890/1-A
Matrix: Solid
Analysis Batch: 107109

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 106890

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C5-C6 Aliphatics	ND		2.0		mg/Kg		03/09/12 11:21	03/13/12 11:41	1
C6-C8 Aliphatics	ND		2.0		mg/Kg		03/09/12 11:21	03/13/12 11:41	1
C10-C12 Aliphatics	ND		2.0		mg/Kg		03/09/12 11:21	03/13/12 11:41	1
C8-C10 Aromatics	ND		2.0		mg/Kg		03/09/12 11:21	03/13/12 11:41	1
C8-C10 Aliphatics	ND		2.0		mg/Kg		03/09/12 11:21	03/13/12 11:41	1
C10-C12 Aromatics	ND		2.0		mg/Kg		03/09/12 11:21	03/13/12 11:41	1
Total VPH	ND		14		mg/Kg		03/09/12 11:21	03/13/12 11:41	1
C12-C13 Aromatics	ND		2.0		mg/Kg		03/09/12 11:21	03/13/12 11:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	104		60 - 140	03/09/12 11:21	03/13/12 11:41	1
BFB - PID	103		60 - 140	03/09/12 11:21	03/13/12 11:41	1

Lab Sample ID: LCS 580-106890/2-A
Matrix: Solid
Analysis Batch: 107109

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106890

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
C5-C6 Aliphatics	8.00	8.72		mg/Kg		109	70 - 130
C6-C8 Aliphatics	4.00	4.45		mg/Kg		111	70 - 130
C10-C12 Aliphatics	4.00	4.96		mg/Kg		124	70 - 130
C8-C10 Aromatics	16.0	15.6		mg/Kg		98	70 - 130
C8-C10 Aliphatics	8.00	9.60		mg/Kg		120	70 - 130
C10-C12 Aromatics	4.00	3.78		mg/Kg		95	70 - 130
C12-C13 Aromatics	8.00	6.59		mg/Kg		82	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	104		60 - 140
BFB - PID	101		60 - 140

Method: NWTPH/EPH - Northwest - Extractable Petroleum Hydrocarbons (GC)

Lab Sample ID: MB 580-107155/1-B
Matrix: Solid
Analysis Batch: 107520

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 107155

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C21-C34 Aliphatics	ND		5.0		mg/Kg		03/13/12 15:49	03/19/12 22:03	1
C16-C21 Aliphatics	ND		5.0		mg/Kg		03/13/12 15:49	03/19/12 22:03	1
C12-C16 Aromatics	ND		5.0		mg/Kg		03/13/12 15:49	03/19/12 22:03	1
C10-C12 Aliphatics	ND		5.0		mg/Kg		03/13/12 15:49	03/19/12 22:03	1
C10-C12 Aromatics	ND		5.0		mg/Kg		03/13/12 15:49	03/19/12 22:03	1
C12-C16 Aliphatics	ND		5.0		mg/Kg		03/13/12 15:49	03/19/12 22:03	1
C21-C34 Aromatics	ND		5.0		mg/Kg		03/13/12 15:49	03/19/12 22:03	1
C16-C21 Aromatics	ND		5.0		mg/Kg		03/13/12 15:49	03/19/12 22:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	93		60 - 140	03/13/12 15:49	03/19/12 22:03	1

QC Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Method: NWTPH/EPH - Northwest - Extractable Petroleum Hydrocarbons (GC) (Continued)

Lab Sample ID: MB 580-107155/1-B

Matrix: Solid

Analysis Batch: 107520

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 107155

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1-Chlorooctadecane	93		60 - 140	03/13/12 15:49	03/19/12 22:03	1

Lab Sample ID: LCS 580-107155/2-B

Matrix: Solid

Analysis Batch: 107520

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 107155

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
C21-C34 Aliphatics	40.0	37.5		mg/Kg		94	70 - 130
C16-C21 Aliphatics	20.0	19.2		mg/Kg		96	70 - 130
C12-C16 Aromatics	20.0	16.6		mg/Kg		83	70 - 130
C10-C12 Aliphatics	6.67	5.22		mg/Kg		78	70 - 130
C10-C12 Aromatics	6.67	5.43		mg/Kg		81	70 - 130
C12-C16 Aliphatics	13.3	12.0		mg/Kg		90	70 - 130
C21-C34 Aromatics	53.3	68.2		mg/Kg		128	70 - 130
C16-C21 Aromatics	40.0	30.9		mg/Kg		77	70 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
o-Terphenyl	89		60 - 140
1-Chlorooctadecane	95		60 - 140

Lab Sample ID: 580-31613-1 MS

Matrix: Solid

Analysis Batch: 107520

Client Sample ID: SVC0027-05

Prep Type: Total/NA

Prep Batch: 107155

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
C21-C34 Aliphatics	39		47.8	75.2		mg/Kg	*	76	70 - 130
C16-C21 Aliphatics	ND		23.9	25.0		mg/Kg	*	105	70 - 130
C12-C16 Aromatics	ND		23.9	ND		mg/Kg	*	97	70 - 130
C10-C12 Aliphatics	ND		7.96	ND		mg/Kg	*	71	70 - 130
C10-C12 Aromatics	ND		7.96	ND		mg/Kg	*	73	70 - 130
C12-C16 Aliphatics	ND		15.9	ND		mg/Kg	*	96	70 - 130
C21-C34 Aromatics	59		63.7	130		mg/Kg	*	112	70 - 130
C16-C21 Aromatics	ND		47.8	42.9		mg/Kg	*	90	70 - 130

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
o-Terphenyl	94		60 - 140
1-Chlorooctadecane	83		60 - 140

Lab Sample ID: 580-31613-1 MSD

Matrix: Solid

Analysis Batch: 107520

Client Sample ID: SVC0027-05

Prep Type: Total/NA

Prep Batch: 107155

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec. Limits	RPD	
				Result	Qualifier					RPD	Limit
C21-C34 Aliphatics	39		48.5	83.6		mg/Kg	*	92	70 - 130	11	25
C16-C21 Aliphatics	ND		24.3	26.8		mg/Kg	*	111	70 - 130	7	25
C12-C16 Aromatics	ND		24.3	ND		mg/Kg	*	91	70 - 130	5	25
C10-C12 Aliphatics	ND		8.09	ND	F	mg/Kg	*	69	70 - 130	0	25
C10-C12 Aromatics	ND		8.09	ND		mg/Kg	*	74	70 - 130	1	25
C12-C16 Aliphatics	ND		16.2	ND		mg/Kg	*	98	70 - 130	4	25

QC Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Method: NWTPH/EPH - Northwest - Extractable Petroleum Hydrocarbons (GC) (Continued)

Lab Sample ID: 580-31613-1 MSD

Matrix: Solid

Analysis Batch: 107520

Client Sample ID: SVC0027-05

Prep Type: Total/NA

Prep Batch: 107155

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
C21-C34 Aromatics	59		64.7	127		mg/Kg	✱	106	70 - 130	2	25
C16-C21 Aromatics	ND		48.5	40.9		mg/Kg	✱	84	70 - 130	5	25
Surrogate	%Recovery	MSD	MSD	Qualifiers	Limits						
<i>o</i> -Terphenyl	88				60 - 140						
1-Chlorooctadecane	87				60 - 140						

Method: EPA 6010C - Total Metals by EPA 6010/7000 Series Methods

Lab Sample ID: 12C0038-BLK1

Matrix: Soil

Analysis Batch: 12C0038

Client Sample ID: Method Blank

Prep Type: Total

Prep Batch: 12C0038_P

Analyte	Blank	Blank	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Lead	ND		1.50		mg/kg wet		03/09/12 09:35	03/14/12 10:41	1.00

Lab Sample ID: 12C0038-BS1

Matrix: Soil

Analysis Batch: 12C0038

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 12C0038_P

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
							Added	
Lead	50.0	51.7		mg/kg wet		103	80 - 120	

Lab Sample ID: 12C0038-MS1

Matrix: Soil

Analysis Batch: 12C0038

Client Sample ID: MW-1-030112

Prep Type: Total

Prep Batch: 12C0038_P

Analyte	Sample	Sample	Spike	Matrix Spike	Matrix Spike	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier				Limits	
Lead	ND		46.3	46.9		mg/kg wet		101	75 - 125	

Lab Sample ID: 12C0038-MSD1

Matrix: Soil

Analysis Batch: 12C0038

Client Sample ID: MW-1-030112

Prep Type: Total

Prep Batch: 12C0038_P

Analyte	Sample	Sample	Spike	Matrix Spike Dup	Matrix Spike Dup	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Lead	ND		45.0	46.2		mg/kg wet		102	75 - 125	1.70	20

Lab Sample ID: 12C0038-DUP1

Matrix: Soil

Analysis Batch: 12C0038

Client Sample ID: MW-1-030112

Prep Type: Total

Prep Batch: 12C0038_P

Analyte	Sample	Sample	Duplicate	Duplicate	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Lead	ND		ND		mg/kg wet			20

Lab Sample ID: 12C0081-BLK1

Matrix: Water

Analysis Batch: 12C0081

Client Sample ID: Method Blank

Prep Type: Total

Prep Batch: 12C0081_P

Analyte	Blank	Blank	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Lead	ND		0.0300	0.0100	mg/l		03/20/12 10:37	03/20/12 16:40	1.00

QC Sample Results

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Method: EPA 6010C - Total Metals by EPA 6010/7000 Series Methods (Continued)

Lab Sample ID: 12C0081-BS1
Matrix: Water
Analysis Batch: 12C0081

Client Sample ID: Lab Control Sample
Prep Type: Total
Prep Batch: 12C0081_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Lead	1.00	1.03		mg/l		103	80 - 120

Lab Sample ID: 12C0081-MS1
Matrix: Water
Analysis Batch: 12C0081

Client Sample ID: MW-1-030112
Prep Type: Total
Prep Batch: 12C0081_P

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	Limits
Lead	ND		1.00	1.02		mg/l		102	75 - 125

Lab Sample ID: 12C0081-MSD1
Matrix: Water
Analysis Batch: 12C0081

Client Sample ID: MW-1-030112
Prep Type: Total
Prep Batch: 12C0081_P

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Lead	ND		1.00	1.03		mg/l		103	75 - 125	0.864	20

Lab Sample ID: 12C0081-DUP1
Matrix: Water
Analysis Batch: 12C0081

Client Sample ID: MW-1-030112
Prep Type: Total
Prep Batch: 12C0081_P

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	Limit
Lead	ND		ND		mg/l			20

Certification Summary

Client: Geo Engineers - Spokane
 Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Spokane	Alaska (UST)	State Program	10	UST-071
TestAmerica Spokane	Washington	State Program	10	C569
TestAmerica Seattle	Alaska (UST)	State Program	10	UST-022
TestAmerica Seattle	California	NELAC	9	1115CA
TestAmerica Seattle	Florida	NELAC	4	E871074
TestAmerica Seattle	L-A-B	DoD ELAP		L2236
TestAmerica Seattle	L-A-B	ISO/IEC 17025		L2236
TestAmerica Seattle	Louisiana	NELAC	6	05016
TestAmerica Seattle	Montana (UST)	State Program	8	N/A
TestAmerica Seattle	Oregon	NELAC	10	WA100007
TestAmerica Seattle	USDA	Federal		P330-11-00222
TestAmerica Seattle	Washington	State Program	10	C553

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.



Method Summary

Client: Geo Engineers - Spokane
Project/Site: 0504-078-00

TestAmerica Job ID: SVC0027

Method	Method Description	Protocol	Laboratory
EPA 8260C	NWTPH-Gx and Volatile Organic Compounds by EPA Method 8260C		TAL SPK
EPA 8011	EDB by EPA Method 8011		TAL SPK
EPA 8270 mod.	Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring		TAL SPK
NWTPH/VPH	Northwest - Volatile Petroleum Hydrocarbons (GC)	NWTPH	TAL SEA
NWTPH/EPH	Northwest - Extractable Petroleum Hydrocarbons (GC)	NWTPH	TAL SEA
EPA 6010C	Total Metals by EPA 6010/7000 Series Methods		TAL SPK
D 2216	Percent Moisture	ASTM	TAL SEA
TA SOP	Conventional Chemistry Parameters by APHA/EPA Methods		TAL SPK

Protocol References:

ASTM = ASTM International

NWTPH = Northwest Total Petroleum Hydrocarbon

Laboratory References:

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

TAL SPK = TestAmerica Spokane, 11922 East 1st. Avenue, Spokane, WA 99206, TEL (509)924-9200

Kevin 509-342-8914

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
 11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
 9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **SN00027**

CLIENT: Geo Engineers Inc.		INVOICE TO:		TURNAROUND REQUEST in Business Days * Organic & Inorganic Analyses STD. <input type="checkbox"/> 10 <input type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 Petroleum Hydrocarbon Analyses STD. <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 OTHER Specify:																																																																																																																																																																																																																														
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PHONE: 509-363-3125 FAX: 509-363-3126				* Turnaround Requests less than standard may incur Rush Charges.																																																																																																																																																																																																																														
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4/13/2012

TEMP: **48** PAGE 1 OF 2

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 11922 E. First Ave, Spokane, WA 99206-5302
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CHAIN OF CUSTODY REPORT

Work Order #: **SV00027**

CLIENT: GeoEngineers Inc.			INVOICE TO:							TURNAROUND REQUEST in Business Days * Organic & Inorganic Analyses <input type="checkbox"/> 10 <input type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. Petroleum Hydrocarbon Analyses <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. <input type="checkbox"/> OTHER Specify: * Turnaround Requests less than standard may incur Rush Charges.						
REPORT TO: Jon Rudders ADDRESS: 523 E 2nd Ave Spokane, WA 99202			P.O. NUMBER:													
PHONE: 509-363-3125 FAX: 509-363-3126			PRESERVATIVE													
PROJECT NAME: Moxee City Shop			REQUESTED ANALYSES													
PROJECT NUMBER: 0504-078-00																
SAMPLED BY: KLR																
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NAI/TH-GX	VOCs * EPA 8260B	1,2-Dichloro Naphthalene	Lead EPA 6010C	EDB EPA 801	EDC EPA 8260						MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1 MW-1-030112	3/1/12 1622	X	X	X	X	X	X									
2 Duplicate-1	3/1/12 1234	X	X	X	X	X	X									
3 Trip Blank			X													
4																
5																
6																
7																
8																
9																
10																
RELEASED BY: [Signature]			DATE: 3/5/12				RECEIVED BY: [Signature]				DATE: 3-5-12					
PRINT NAME: Kevin Rouds			FIRM: GEI				PRINT NAME: Carl Stapleton				FIRM: TestAmerica					
RELEASED BY:			DATE:				RECEIVED BY:				DATE:					
PRINT NAME:			FIRM:				PRINT NAME:				FIRM:					
ADDITIONAL REMARKS:																
															TEMP: 21.8	PAGE 2 OF 2

* VOCs should include: naphthalene, EDB, 1,2 dichloro ethane (EDC), n-hexane, and MTBE.

TAL-1000(0408)

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4/13/2012



**TestAmerica Spokane
Sample Receipt Form**

Work Order #: <u>SV00087</u>	Client: <u>GeoEngineers</u>	Project: <u>Maxee City Shop</u>
Date/Time Received: <u>3-5-12 17:05</u>	By: <u>CS</u>	
Samples Delivered By: <input type="checkbox"/> Shipping Service <input type="checkbox"/> Courier <input checked="" type="checkbox"/> Client <input type="checkbox"/> Other: _____		

List Air Bill Number(s) or Attach a photocopy of the Air Bill:

Receipt Phase	Yes	No	NA	Comments
Were samples received in a cooler:	X			
Custody Seals are present and intact:			X	
Are CoC documents present:	X			
Necessary signatures:	X			

Thermal Preservation Type: Blue Ice Gel Ice Real Ice Dry Ice None Other: _____

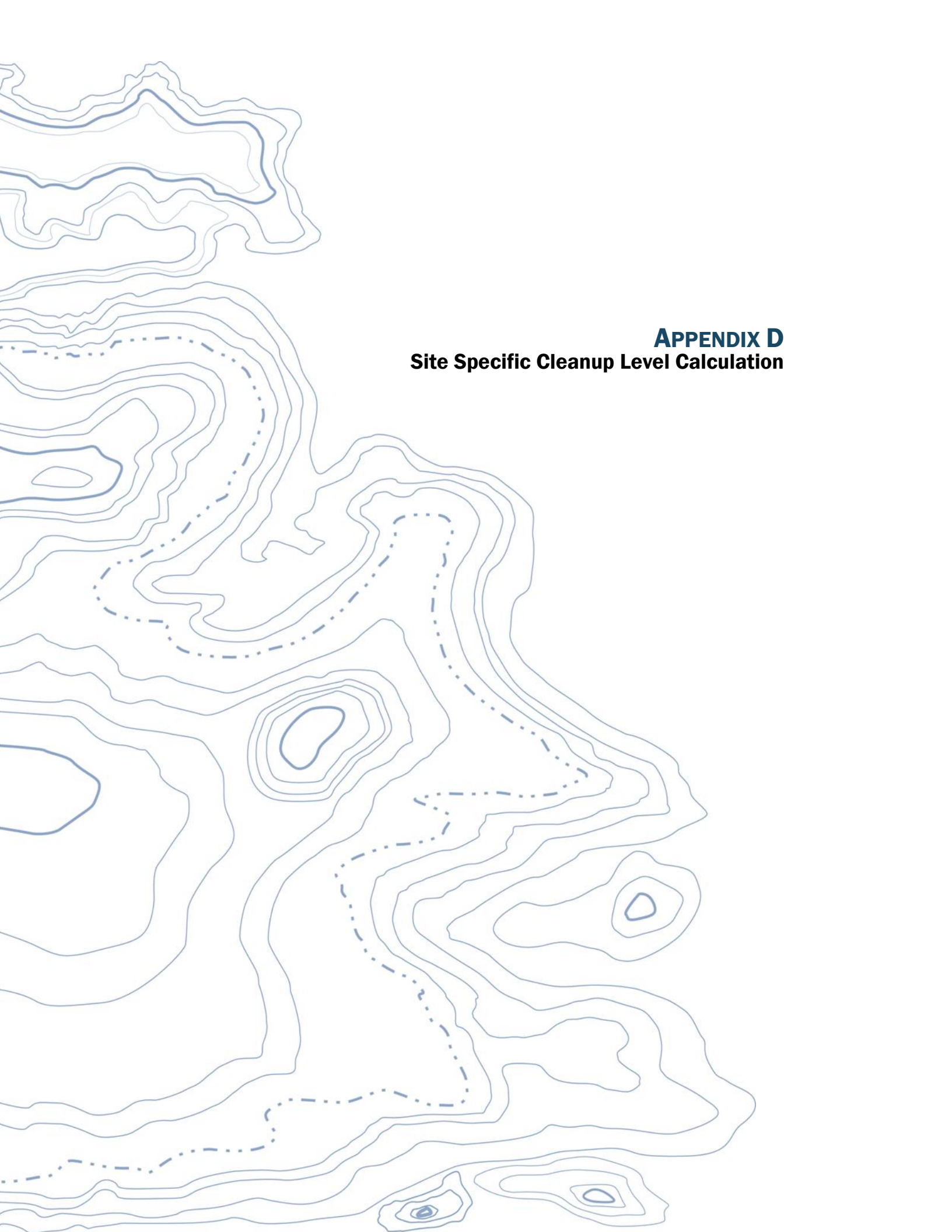
Temperature by IR Gun: 48 °C Thermometer Serial #81500 (acceptance criteria 0-6 °C)

Temperature out of range: Not enough ice Ice melted w/in 4hrs of collection NA Other: _____

Log-In Phase	Yes	No	NA	Comments
--------------	-----	----	----	----------

Date/Time: <u>3-6-12 10:40</u> By: <u>CS</u>				
Are sample labels affixed and completed for each container	X			
Samples containers were received intact:	X			
Do sample IDs match the CoC	X			Two Duplicates received one for water, one soil only one on CoC.
Appropriate sample containers were received for tests requested	X			
Are sample volumes adequate for tests requested	X			
Appropriate preservatives were used for the tests requested	X			
pH of inorganic samples checked and is within method specification	X			
Are VOC samples free of bubbles >6mm (1/4" diameter)			X	
Are dissolved parameters field filtered			X	
Do any samples need to be filtered or preserved by the lab			X	
Does this project require quick turnaround analysis			X	
Are there any short hold time tests (see chart below)		X		
Are any samples within 2 days of or past expiration		X		
Was the CoC scanned	X			
Were there Non-conformance issues at login		X		
If yes, was a CAR generated #			X	

24 hours or less	48 hours	7 days
Coliform Bacteria	BOD, Color, MBAS	TDS, TSS, VDS, FDS
Chromium +6	Nitrate/Nitrite	Sulfide
	Orthophosphate	Aqueous Organic Prep



APPENDIX D
Site Specific Cleanup Level Calculation

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 05/10/12
 Site Name: City Lot and STP
 Sample Name: DP-4 (4-4.5)

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc	Composition
	dry basis mg/kg	Ratio %
Petroleum EC Fraction		
AL_EC >5-6	1.1	0.66%
AL_EC >6-8	2.4	1.45%
AL_EC >8-10	2.3	1.39%
AL_EC >10-12	3.8	2.30%
AL_EC >12-16	12	7.25%
AL_EC >16-21	12	7.25%
AL_EC >21-34	39	23.57%
AR_EC >8-10	2.3	1.39%
AR_EC >10-12	6	3.63%
AR_EC >12-16	12	7.25%
AR_EC >16-21	12	7.25%
AR_EC >21-34	59	35.65%
Benzene	0.01065	0.01%
Toluene	0.071	0.04%
Ethylbenzene	0.071	0.04%
Total Xylenes	1.065	0.64%
Naphthalene	0.142	0.09%
1-Methyl Naphthalene	0.0185	0.01%
2-Methyl Naphthalene	0.0289	0.02%
n-Hexane	0.071	0.04%
MTBE	0.02125	0.01%
Ethylene Dibromide (EDB)	0.006	0.00%
1,2 Dichloroethane (EDC)	0.071	0.04%
Benzo(a)anthracene		0.00%
Benzo(b)fluoranthene		0.00%
Benzo(k)fluoranthene		0.00%
Benzo(a)pyrene		0.00%
Chrysene		0.00%
Dibenz(a,h)anthracene		0.00%
Indeno(1,2,3-cd)pyrene		0.00%
Sum	165.4763	100.00%

Notes for Data Entry | Set Default Hydrogeology |
 Clear All Soil Concentration Data Entry Cells |
 Restore All Soil Concentration Data cleared |

REMARK:
 Enter site-specific information here.....

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentration (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here: ug/L

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 5/10/2012

Site Name: City Lot and STP

Sample Name: DP-4 (4-4.5)

Measured Soil TPH Concentration, mg/kg: 165.476

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	300	5.60E-07	5.33E-02	Pass
	Method C	17,462	9.48E-08	4.20E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	1	1.95E-03	5.95E-01	Fail
	Target TPH GW Conc. @ 500 ug/L	1,420	NA	NA	Pass

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	299.74	17,462.12
Most Stringent Criterion	EDB	Total Risk=1E-5

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI=1	NO	3.11E+03	1.05E-05	1.00E+00	NO	3.94E+04	2.26E-05	1.00E+00
Total Risk=1E-5	NO	2.96E+03	1.00E-05	9.52E-01	YES	1.75E+04	1.00E-05	4.43E-01
Risk of Benzene= 1E-6	NO	2.82E+05	9.54E-04	9.08E+01	NA			
Risk of cPAHs mixture= 1E-6	NA	NA	NA	NA				
EDB	YES	3.00E+02	1.01E-06	9.65E-02				
EDC	NO	2.37E+04	8.00E-05	7.62E+00				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

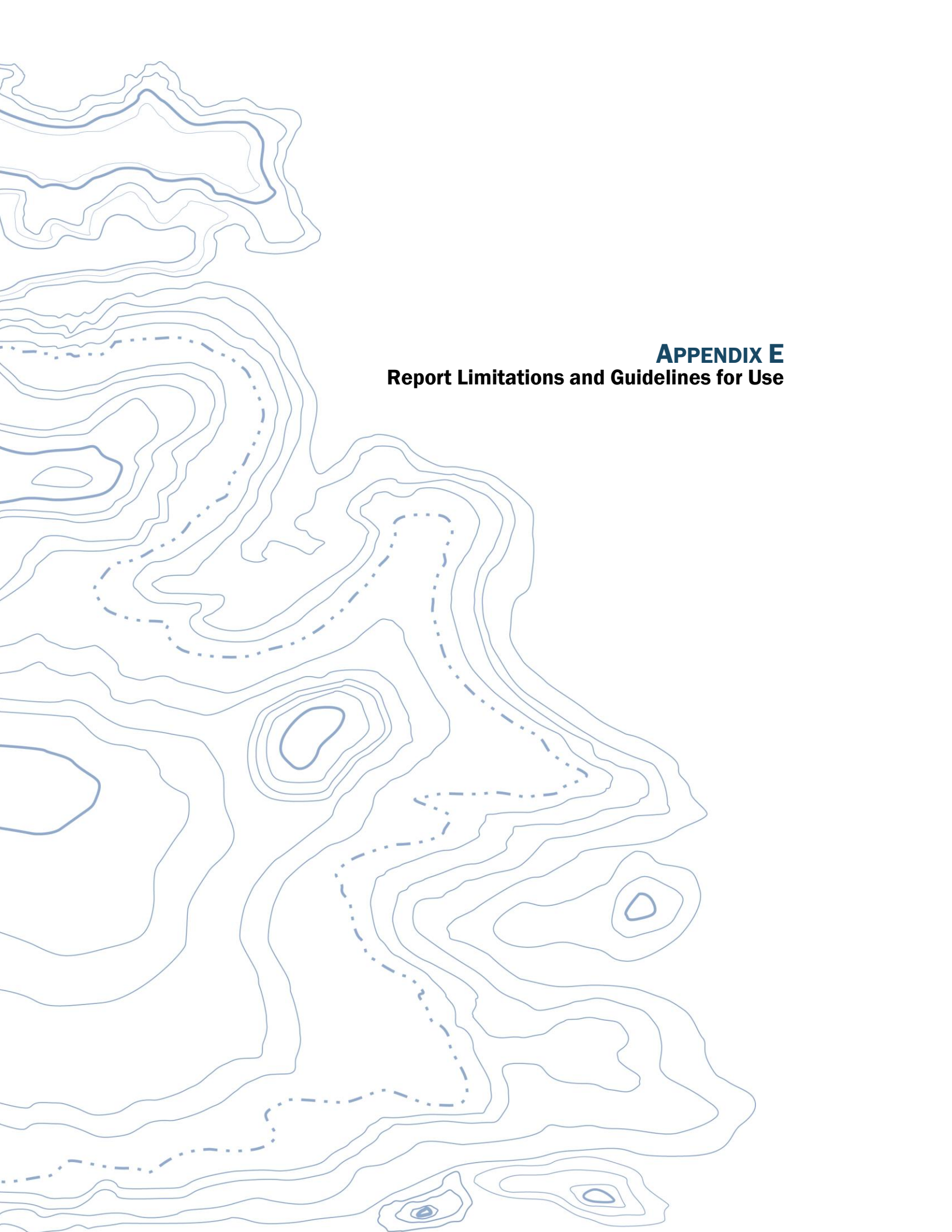
3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	Total Risk = 1E-5
Protective Ground Water Concentration, ug/L	2.40
Protective Soil Concentration, mg/kg	0.75

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	NO	3.69E+02	4.87E-03	1.00E+00	5.35E+02
Total Risk = 1E-5	YES	2.40E+00	1.00E-05	5.87E-03	7.47E-01
Total Risk = 1E-6	YES	2.14E-01	1.00E-06	5.34E-04	7.53E-02
Risk of cPAHs mixture= 1E-5	NA	NA	NA	NA	NA
Benzene MCL = 5 ug/L	NO	3.88E+02	5.39E-03	1.06E+00	6.25E+02
MTBE = 20 ug/L	NO	3.98E+02	5.67E-03	1.10E+00	6.78E+02

3.2. Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 500 ug/L	5.00E+02	8.35E-03	1.44E+00	1.42E+03



APPENDIX E
Report Limitations and Guidelines for Use

APPENDIX E REPORT LIMITATIONS AND GUIDELINES FOR USE¹

This Appendix provides information to help you manage your risks with respect to the use of this report.

Environmental Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of the Washington State Department of Ecology (Ecology). This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and project site. No one except Ecology should rely on this environmental report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

This Environmental Report is Based on a Unique Set of Project-Specific Factors

This report has been prepared for the City Shop and Sewage Treatment Plant (STP) site located in Moxee, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Reliance Conditions for Third Parties

Our report was prepared for the exclusive use of Ecology. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm and Ecology with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with

¹ Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

Ecology and generally accepted environmental practices in this area at the time this report was prepared.

Environmental Regulations are Always Evolving

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substance, change or if more stringent environmental standards are developed in the future.

Uncertainty May Remain Even After This Phase II ESA is Completed

No ESA can wholly eliminate uncertainty regarding the potential for contamination in connection with a property. Our interpretation of subsurface conditions in this study is based on field observations and chemical analytical data from widely-spaced sampling locations. It is always possible that contamination exists in areas that were not explored, sampled or analyzed.

Subsurface Conditions Can Change

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying this report to determine if it is still applicable.

Soil and Groundwater End Use

The cleanup levels referenced in this report are site- and situation-specific. The cleanup levels may not be applicable for other sites or for other on-site uses of the affected media (soil and/or groundwater). Note that hazardous substances may be present in some of the site soil and/or groundwater at detectable concentrations that are less than the referenced cleanup levels. GeoEngineers should be contacted prior to the export of soil or groundwater from the subject site or reuse of the affected media on site to evaluate the potential for associated environmental liabilities. We cannot be responsible for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject site to another location or its reuse on site in instances that we were not aware of or could not control.

Most Environmental Findings are Professional Opinions

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ – sometimes significantly – from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Do Not Redraw the Exploration Logs

Environmental scientists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in an environmental report should never be redrawn for inclusion in other design drawings. Only photographic or electronic reproductions are acceptable, but recognize that separating logs from the report can elevate risk.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory “limitations” provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site.

Geotechnical, Geologic and Geoenvironmental Reports Should Not be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Biological Pollutants

GeoEngineers’ Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term “Biological Pollutants” includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

If Ecology desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

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