Phase II Environmental Site Assessment

Rufus 2.0
Block 21, Denny Triangle
Seattle, Washington

for
Acorn Development, LLC

November 21, 2012

GeoEngineers
Earth Science + Technology

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Denny Triangle
Seattle, Washington

File No. 20434-001-11

November 21, 2012

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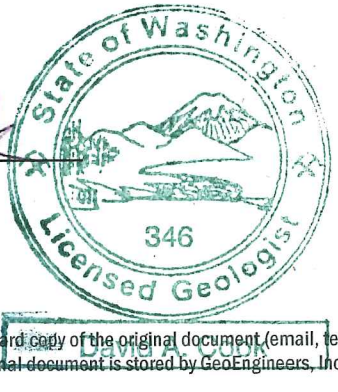
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EXECUTIVE SUMMARY

The objectives of the Phase II Environmental Site Assessment (ESA) services completed at Block 21 (bounded by Blanchard and Bell Streets and 8th and 9th Avenues) in the Denny Triangle neighborhood of Seattle, Washington were to: 1) evaluate the potential vertical and lateral extent of soil contamination associated with the current or past sources of contamination; 2) evaluate impacts to fill soil from an unknown source; and 3) evaluate groundwater conditions in the deep regional aquifer located at approximately elevation 15 to 20 (approximately 65-85 feet below the ground surface. Several current and historic potential sources of contamination were identified on and adjacent to the Subject Property, including former auto repair facilities, possible or known underground storage tanks and undocumented, imported fill soil.

Five (5) hollow-stem auger borings and fourteen (14) direct-push borings were completed at the Subject Property and monitoring wells were installed in three of the borings. Soil and groundwater samples were obtained from the borings/monitoring wells for chemical analysis. Based on the geologic information and chemical analytical results obtained during this study we conclude the following regarding the Subject Property:

- FILL SOIL - Historic research and geologic description of soil samples from our explorations indicates that in the early 1900s, soil was moved from, and onto, the Subject Property from what was formerly Denny Hill during the Denny Hill Cut and Regrade activities. We estimate that during the regrade activities a significant portion of soil was removed ("cut") from the eastern flank of former Denny Hill which occupied the northern portion of Block 21. Based on our review of historic maps and topography, some of the soil removed from Denny Hill likely was placed on the eastern portion of Block 21. It is also possible that additional, undocumented, imported fill was placed beneath the Budget Rent A Car building at the southwest corner to meet building subgrade. The thickest volume of fill soil (approximately 13 feet, which could be a combination of fill from Denny Hill and/or undocumented import fill) was placed on the eastern portion of the block, along 8th Avenue. Chemicals of concern (hydrocarbons, metals, PAHs, VOCs) either were not detected, or were detected at background concentrations in the soil samples tested. Figure 7 of this report shows the relationship between fill thickness and soil chemical analytical results.
- NATIVE SOIL –Figures 3 and 8 of this report show the areal location of soil samples that were analyzed for chemicals of concern (hydrocarbons, metals, PAHs, VOCs). No contaminants exceeded MTCA cleanup levels, or were greater than natural background. The results indicate that excavation and redevelopment can proceed with little impact. However, it will be important to establish a construction contingency plan to guide contractors in the appropriate removal of underground storage tanks identified during the historical research, appropriate identification of soil end use locations and establishment of soil management protocols if contamination is identified in areas that were not explored.
- GROUNDWATER – Contaminants of concern were not detected in any of the groundwater samples obtained from the regional aquifer. Groundwater extracted for the purpose of dewatering of the excavation will likely meet the specifications for discharge without pre-treatment for hazardous chemicals. Discharge into the combined storm-sanitary sewer will still need to meet King County discharge requirements for physical parameters.

- Hazardous building materials requiring abatement were identified in all of the buildings on Block 21. PRE's Regulated Building Materials Survey Reports for each building on Block 21 are included in Appendix A.

This Executive Summary should be used only in the context of the full report for which it is intended.

1.0 INTRODUCTION

This report presents the results of our Phase II Environmental Site Assessment (ESA) completed during 2012 for Block 21 in the Denny Triangle Neighborhood in downtown Seattle, Washington.

- Block 21 is comprised of six adjoining tax parcels (066000-0325, 0335, 0340, 0345, 0355 and 0375) and is bounded by Bell Street to the north, 8th Avenue to the east, Blanchard Street to the south and 7th Avenue to the west.

This block is referred to herein as the "Subject Property." The Subject Property is shown relative to surrounding physical features on the Vicinity Map, Figure 1. The site layout, including site structures, boring locations and cross-section lines are shown on the Site Plan, Figure 2.

In addition to the Phase II ESA, a hazardous building materials study was also completed by our sub-consultant, Pacific Rim Environmental (PRE) to provide information about the location and quantity of suspect regulated building materials (asbestos, lead-based paint and universal waste) in the current on site structures on Blocks 21. The hazardous building materials (HBM) survey was conducted by an AHERA accredited building inspector. The results of this study are described briefly below and are presented in Appendix A.

Our Phase II ESA services on the Subject Property were completed in conjunction with our geotechnical engineering services. The results of our geotechnical studies are summarized in a separate report.

2.0 BACKGROUND AND SUMMARY OF PREVIOUS STUDIES

2.1. Previous Environmental Studies and Current or Historic Potential Sources of Contamination

GeoEngineers completed a Phase I ESA for the Subject Property. The results of our Phase I ESA study are summarized in our report titled, "Phase I Environmental Site Assessment, Rufus 2.0, Denny Triangle, Blocks 14, 19, 20, 18 and 21, Seattle, Washington," dated June 7, 2012. A brief summary of key environmental findings from the Phase I ESA are described below.

Several current and historic potential sources of contamination were identified on and adjacent to the Subject Property, including former auto repair facilities, paint companies and undocumented fill soil. These historic uses are shown on Figure 2. We understand based on historic research that in the early 1900s, soil was moved from, and onto, the Subject Property from what was formerly Denny Hill during the Denny Hill Cut and Regrade activities. It is likely that imported soil from an unknown source was also placed on portions of the Subject Property.

Our research indicates that there are three underground storage tanks (USTs) located on the western portion of Block 21 (two at the location of the current Budget Rent A Car and one at the current Hurricane Cafe).

The potential contaminants of concern (based on current and historic site use, the presence of unknown fill, and our review of previous environmental reports) for the Subject Property include the following:

- Gasoline-, diesel- and heavy oil-range petroleum hydrocarbons;
- Metals;
- Polycyclic aromatic hydrocarbons (PAHs); and,
- Volatile organic compounds (VOCs).

The historic sources of potential contamination are shown graphically on Figure 2.

3.0 SCOPE OF SERVICES

The general objectives of the Phase II ESA services described in this report were to 1) evaluate the potential vertical and lateral extent of soil contamination associated with the identified potential sources of contamination; 2) evaluate fill soil from an unknown source; and, 3) evaluate groundwater conditions in the deep regional aquifer, located at approximately elevation 20 feet (approximately 65 to 85 feet below the ground surface [bgs]). Our specific scope of services is presented in our proposals dated July 19, 2012 and September 7, 2012. Our environmental scope of services was as follows:

- Prepared a site-specific health and safety plan for use by GeoEngineers' employees working at the site.
- Prepared a Work Plan prior to the exploration program. This effort included two methods of exploration: the hollow-stem auger borings and wells installed into the deep, regional aquifer and the direct-push explorations located in areas to investigate the lateral and vertical extent of potential contamination in the shallow fill.
- Arranged for a utility locate (private and one-call) prior to the exploration program and attended site walk with representatives from Seneca Group, the current property owner (Clise Properties), the subcontracted drilling company and the subcontracted private utility locate company to identify boring locations and coordinate access.
- Observed the completion of a total of 19 borings (5 by hollow-stem auger and 14 by direct-push drilling methods) to depths ranging from approximately 7.5 to 110 feet bgs. Three of the borings were completed as monitoring wells.
- Obtained soil samples at approximately 2.5-foot or 5-foot intervals for field screening and possible chemical analysis. Performed field screening of soil samples for evidence of petroleum and/or VOC-related contamination using visual, water sheen and headspace vapor screening methods using a photoionization detector (PID). Visually classified the soil samples in general accordance with the ASTM International (ASTM) D 2488-00.

- Submitted at least one or two soil samples from each boring for chemical analysis or one or more of the following:
    - Gasoline-range petroleum hydrocarbons using Northwest Method NWTPH-Gx;
    - Diesel- and heavy oil-range petroleum hydrocarbons using Northwest Method NWTPH-Dx;
    - Resource Conservation and Recovery Act (RCRA) 8 Metals using EPA Methods 6000/7000 Series;
    - PAHs using EPA Method 8270D; and,
    - VOCs using EPA Method 8260B.

  Soil samples were submitted for Fremont Analytical (Fremont) in Seattle, Washington. Soil samples were submitted on a standard turnaround time.
- Measured the depth to water in each of the monitoring wells using an electronic water level indicator. Additionally, the three wells (MW21-1, MW21-2 and MW21-3) were installed with AquiStar® PT2X Smart Sensors to provide continuous groundwater measurements over time.
- Obtained groundwater samples from the three monitoring wells (MW21-1, MW21-2 and MW21-3) that contained groundwater at the time of sampling. Groundwater samples were collected using low-flow purging and sampling methods.
- Submitted each of the groundwater samples for chemical analysis of the following:
    - Gasoline-range petroleum hydrocarbons using Northwest Method NWTPH-Gx;
    - Diesel- and heavy oil-range petroleum hydrocarbons using Northwest Method NWTPH-Dx;
    - RCRA 8 Metals using EPA Methods 6000/7000 Series;
    - VOCs using EPA Method 8260B.
- Coordinated and subcontracted hazardous building material studies to provide information about the location and quantity of suspect regulated building materials (asbestos, lead-based paint and universal waste) in the current on site structures on Block 21. Pacific Rim Environmental was subcontracted.
- Evaluated the field and laboratory results relative to MTCA cleanup levels.

4.0 SOIL SAMPLING AND CHEMICAL ANALYTICAL RESULTS

4.1. General

The explorations used for environmental sampling and testing were completed by two methods:

- Method 1: Soil and groundwater samples were obtained from five borings using hollow-stem auger drilling equipment owned and operated by Geologic Drill of Spokane, Washington. These borings were completed between October 4 and 11, 2012. These deep borings were widely spaced, but were located in order to provide information for geotechnical engineering purposes as well as in areas of known recognized environmental conditions.

- Method 2: The second method of exploration was completed to refine our understanding of the environmental condition of the Subject Property. Soil and groundwater samples were obtained from 14 soil borings using direct-push drill equipment owned and operated by Cascade Drilling of Woodinville, Washington. These borings were completed between October 5 and 8, 2012.

Discrete soil samples were obtained from the borings at approximately 2.5- or 5-foot intervals for field screening and possible chemical analytical testing of one or more of the analytes listed in Section 3.0. Soil samples were selected for chemical analysis based on field screening indications of contamination, the depth and location of the soil sample relative to historic or current sources of contamination, the location of the sample relative to groundwater, and the presence of fill soil from an unknown source. Field screening consisted of visual, headspace and water sheen screening methods. The approximate exploration locations are shown in Figures 2 and 3.

4.2. Subsurface Conditions

The subsurface conditions at the Subject Property are described in detail in our geotechnical report titled, "Geotechnical Master Use Permit Report, Rufus 2.0 Development – Block 21, Seattle, Washington," dated November 15, 2012.

4.2.1. Subsurface Soil Conditions

Soil encountered at the Subject Property consists of relatively shallow fill (up to approximately 13 feet) overlying recent deposits and competent glacially consolidated soils.

- The fill generally consists of loose to medium dense/medium stiff to very stiff silty sand and silt with variable gravel and cobble content and occasional brick, charcoal or wood debris. Based on historical research, the block is located on the eastern edge of the 1928-1930 Denny Regrade, and portions of Block 21 are reported to have up to 20 feet of fill as part of the regrade process. The thickness of fill encountered in the explorations completed for this study ranged up to approximately 13 feet, with the fill increasing from about 2 to 5 feet along the western edge of the block to about 13 feet along the eastern edge of the block. Fill is expected to be locally thicker in the areas adjacent to the Budget Rent-a-Car parking garage and other below-grade improvements.
- The recent native soil deposits typically consist of stiff to very stiff silt and clay with occasional sand interbeds and variable gravel content or medium dense to dense sand with variable silt and gravel content. The recent deposits were observed below the fill or ground surface in the borings along east side of the block and in boring B21-2 on the western side of the block. Where observed, the recent deposits typically ranged in thickness from 4 to 9½ feet.
- The glacially consolidated native soils were encountered below the fill and recent deposits, where present. Two glacially consolidated units were encountered in the explorations: cohesionless sand and gravel, and till-like deposits. Additionally, while not encountered during our drilling activities, occasional cobbles and boulders have been observed in glacially consolidated soils in nearby excavations and may be present at this site.
- Interpreted subsurface conditions are presented in the geologic cross sections shown in Appendix B. These cross sections were included in our geotechnical report referenced above and the purpose of these cross sections is to show the detailed interpreted subsurface

conditions across the Subject Property. The additional geologic cross sections presented in this report (Figures 4 through 6) show just the fill/native soil contact and the chemical analytical results. The purpose of Figures 4 through 6 is to show the contact between fill and native soils and the chemical analytical results of soil samples tested from these horizons.

4.2.2. Subsurface Groundwater Conditions

Instrumentation Northwest, Inc. (INW) AquiStar® PT2X Smart Sensors were installed in each of the deep monitoring wells completed during our October 2012 hollow-stem auger borings. The AquiStar® PT2X Smart Sensors were used to obtain regular measurements of the top of the regional groundwater table in order to evaluate the variability in groundwater levels seasonally and following significant rainfall events. Based on the monitoring well data, conditions observed during drilling, and data from monitoring wells in the vicinity, we anticipate that the regional groundwater table is between approximate Elevations 15 and 20 feet. Additionally, based on our explorations, perched groundwater appears to be present at discontinuous locations throughout the project area. The Specification Sheet for the AquiStar® PT2X Smart Sensors is presented in Appendix C.

Exploration field procedures (including field screening methods and boring logs) are described in Appendix C.

4.3. Hollow-Stem Auger Borings and Deep Wells

4.3.1. Purpose and Boring Locations

The purpose of the borings completed by the hollow stem auger drill rig were to obtain information for geotechnical engineering, preliminary environmental evaluation and to explore deeper, regional, groundwater conditions through the installation of groundwater monitoring wells to depths of approximately 94 to 111 feet bgs. Five hollow-stem auger borings (B21-1 and B21-2 and MW21-1, MW21-2 and MW21-3) were completed to depths ranging between approximately 96 and 111 feet bgs. Three of the borings were completed as deep monitoring wells (generally screened between approximately 75 and 111 feet bgs) to evaluate the potential for contaminants in the regional groundwater aquifer located at approximately Elevations 15 and 20 feet. The locations of the borings are shown in the Site Plan, Figure 2 and a graphical depiction of soil samples with concentrations of contaminants is shown in Figure 3. The borings and monitoring wells were generally positioned across the block, but were targeted to evaluate potential historic sources of contamination based on our review of previous environmental reports and the results of our Phase I ESA.

4.3.2. Soil Chemical Analytical Results

- Block 21 (2 borings and 3 wells; 0 locations impacted): Contaminants of concern were not detected and/or were similar to the state background metals concentrations in each of the soil samples submitted for chemical analysis from fill and native soil samples obtained on Block 21.

Fill of varying thickness (between less than 1 foot and approximately 13 feet) was observed in borings completed across the Subject Property.

Chemical analytical results are summarized in Table 1 and are presented graphically on Figure 3. Laboratory reports are included in Appendix D. Additionally, cross sections showing the chemical analytical results of discrete soil samples are presented in Figures 4 through 6. Note that these geologic cross sections were simplified to only represent the contact between fill and underlying native soil. Detailed geologic cross sections from our geotechnical engineering report referenced in Section 4.2 above are presented in Appendix B.

4.4. Direct-Push Borings

4.4.1. Purpose and Boring Locations

The purpose of the direct-push explorations was to obtain a better understanding of the lateral and vertical extent of contaminants of concern in fill throughout the project area. Therefore, 14 additional borings using direct-push drilling methods were completed on the Subject Property (B21-3 through B21-16). Each of the borings was completed to depths ranging between approximately 7.5 and 20 feet bgs. The locations of the borings and monitoring wells are shown in the Site Plan, Figure 2 and a graphical depiction of soil samples with concentrations of contaminants is shown in Figure 3.

The locations of the direct-push borings were chosen based on the current and historic sources of potential contamination on the Subject Property and the potential presence of fill. Specifically, the rationale for completing the locations of the borings is described in the following bullets.

- **Block 21:** Fill of varying thickness (between approximately 0.5 and 13 feet thick) is present across Block 21 and undocumented imported fill soil commonly contains contaminants. The source(s) of the fill on the Subject Property are unknown. Although only metals were detected in fill soil on this block at concentrations around natural background levels.

4.4.2. Soil Chemical Analytical Results

- **Block 21 (14 borings; 0 locations impacted):** Contaminants of concern (metals, PAHs, VOCs and petroleum hydrocarbons) were not detected and/or were similar to the state background metals concentrations in each of the soil samples submitted for chemical analysis from fill and native soil samples obtained on Block 21.

Chemical analytical results from the October 2012 subsurface explorations are summarized in Table 1 and are presented graphically on Figure 3. Laboratory reports are included in Appendix D. Additionally, cross sections showing the chemical analytical results of discrete soil samples are presented in Figures 4 through 6.

5.0 GROUNDWATER SAMPLING AND CHEMICAL ANALYTICAL RESULTS

- **Deep, Regional Groundwater Wells:** Monitoring wells completed in October 2012 were completed to monitor the regional groundwater located between approximately elevation 15 and 20 (approximately 65 to 85 feet below the Subject Property). Contaminants of concern (metals, PAHs, VOCs and petroleum hydrocarbons) were not detected in groundwater samples obtained for chemical analysis from the deep groundwater monitoring wells on Block 21 during this sampling event.

- **Shallow, Perched Groundwater Wells:** Perched groundwater was not observed on Block 21 and no contaminants of concern were identified on Block 21, therefore, shallow perched monitoring wells were not warranted. Chemical analytical results from the October 2012 groundwater sampling event are summarized in Table 2. Laboratory reports are included in Appendix D.

6.0 HAZARDOUS BUILDING MATERIALS SURVEYS

Hazardous building materials surveys were conducted by GeoEngineers subconsultant, PRE on each of the buildings on Block 21.

- Block 21 is currently occupied by three buildings. Building 1 (2213 8th Avenue) is the approximately 34,560 square-foot Cornish College Dorm, a three-story masonry building that was constructed in 1957. It is located on the east half of Block 21. Building 2 (2230 7th Avenue) is the approximately 5,302 square-foot Hurricane Café, a one-story masonry restaurant that was constructed in 1940. It is located on the north portion of the western half block. Building 3 (2200 7th Avenue) is the approximately 11,988 square-foot Budget Rent A Car building, a one-story masonry retail building that was constructed in 1953. It is located on the south portion of the west half block.

Hazardous building materials requiring abatement were identified in all of the buildings on Block 21. PRE's Regulated Building Materials Survey Reports for each building on Block 21 are included in Appendix A.

7.0 SUMMARY OF FINDINGS

Based on the geologic information and chemical analytical results obtained during this study we conclude the following regarding the Subject Property:

- **FILL SOIL -** The thickest volume of fill soil (approximately 13 feet, which could be a combination of fill from Denny Hill and/or undocumented import fill) was placed on the eastern portion of the block, along 8th Avenue. Chemicals of concern (hydrocarbons, metals, PAHs, VOCs) either were not detected, or were detected at background concentrations in the soil samples tested.
- **NATIVE SOIL** –No contaminants (hydrocarbons, metals, PAHs, VOCs) exceeded MTCA cleanup levels, or were greater than natural background based on the samples tested from native soil.
- **GROUNDWATER** – Contaminants of concern were not detected in any of the groundwater samples obtained from the regional aquifer.

The results indicate that excavation and redevelopment can proceed with little impact as shown on Figure 8. However, it will be important to establish a construction contingency plan to guide contractors in the appropriate removal of underground storage tanks identified during the historical research, appropriate identification of soil end use locations and establishment of soil management protocols if contamination is discovered during construction activities in areas that were not explored. Groundwater extracted for the purpose of dewatering of the excavation will likely meet the specifications for discharge without pre-treatment for hazardous chemicals.

Discharge into the combined storm-sanitary sewer will still need to meet King County discharge requirements for physical parameters.

Fill soil which does not contain brick, concrete or wood debris was most likely placed during the Denny Hill Regrade (does not consist of undocumented, imported fill). This fill likely will not pose an environmental risk during development from the perspective of end use and/or disposition of this fill; this category is assumed to represent soil that can be managed under routine construction methods for an uncontaminated development project. However, caution should be used to assure that recipients of this soil will accept it based on their review of existing chemical analytical results. We also note that it is possible that isolated location of undocumented, imported fill exists in these areas in locations of utility trenches or other construction that has taken place since the Denny Hill Regrade activities.

Hazardous building materials requiring abatement were identified in all of the buildings on Block 21. PRE's Regulated Building Materials Survey Reports for each building on Block 21 are included in Appendix A.

8.0 LIMITATIONS

We have prepared this report for the exclusive use of the Acorn Development, LLC 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. No warranty or other conditions, express or implied, should be understood.

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

Table 1

Soil Field Screening and Chemical Analytical Data (Petroleum Hydrocarbons, Metals, PAHs and VOCs)

Project Rufus 2.0
Block 21, Denny Triangle
Seattle, Washington

Exploration Location[1]	Sample ID	Depth (feet bgs)	Location of Sample Relative to Fill/Native Soil and Groundwater	Field Screening[2]		Petroleum Hydrocarbons (mg/kg)			RCRA 8 Metals[3] (mg/kg)								PAHs (mg/kg)		VOCs[4] (mg/kg)
				Sheen	Headspace (ppm)	Gasoline Range[5]	Diesel Range[6]	Heavy Oil Range[6]	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Non-Carcinogenic[7]	Carcinogenic[8]	
Block 21																			
Hollow-Stem Auger Borings Completed October 4 through 11, 2012																			
MW21-1	MW21-1-5.0	5	Native	ns	<1	<6.72	<18.4	<46.1	**0.891**	**43**	<0.180	**31.9**	**1.32**	<0.450	<0.0900	<0.264	nd	nd	nd
	MW21-1-17.5	17.5	Native	ns	<1	<8.68	<20.2	<50.6	**3.97**	**125**	<0.186	**73.3**	**4.79**	<0.465	<0.0930	<0.242	nd	nd	nd
MW21-2	MW21-2-7.5	7.5	Fill	ns	<1	<4.22	<21.2	<53.1	**3.09**	**95.4**	<0.159	**52**	**3.41**	<0.396	<0.0793	<0.292	nd	nd	nd
	MW21-2-20.0	20	Native	ns	<1	<5.62	<21.2	<53.1	**2.01**	**80.1**	<0.161	**29.8**	**1.68**	<0.401	<0.0803	<0.255	--	--	nd
MW21-3	MW21-3-2.5	2.5	Native	ns	<1	<7.79	<23.8	<59.4	**5.11**	**175**	<0.184	**63.3**	**8.17**	<0.459	<0.0918	<0.270	nd	nd	nd
	MW21-3-25.0	25	Native	ns	<1	<4.90	<19.9	<49.8	**1.34**	**28.5**	<0.155	**28**	**1.31**	<0.387	<0.0775	<0.242	--	--	nd
B21-1	B21-1-7.5	7.5	Fill	ns	<1	<4.36	<19.6	<49.1	**2.84**	**75.8**	<0.172	**42.8**	**2.64**	<0.430	<0.0859	<0.264	nd	nd	nd
	B21-1-25.0	25	Native	ns	<1	<5.49	<19.7	<49.3	**0.836**	**38**	<0.156	**27.0**	**1.27**	<0.391	<0.0782	<0.232	--	--	nd
B21-2	B21-2-5.0	5	Fill	ns	<1	<5.88	<25.2	<63.0	**6.37**	**126**	<0.204	**59.3**	**4.76**	<0.509	<0.102	<0.309	nd	nd	nd
	B21-2-20.0	20	Native	ns	<1	<5.56	<17.6	<44.1	**2.12**	**33.2**	<0.163	**24.5**	**1.36**	<0.406	<0.0813	<0.229	--	--	nd
Direct-Push Borings Completed October 5 through 8, 2012																			
B21-3	B21-3-7.5	7.5	Native	ns	<1	<5.92	<25.7	<64.2	**5.04**	**160**	<0.208	**74.4**	**5.41**	<0.521	<0.0104	<0.327	nd	nd	nd
B21-4	B21-4-5.0	5	Native	ns	<1	<5.02	<22.4	<55.9	**7.24**	**106**	<0.154	**49.8**	**3.46**	<0.285	<0.0769	<0.290	nd	nd	nd
B21-5	B21-5-7.5	7.5	Native	ns	<1	<5.31	<23.6	<59.0	**6.54**	**138**	<0.193	**50.7**	**4.39**	<0.483	<0.0966	<0.302	nd	nd	nd
B21-6	B21-6-7.5	7.5	Fill	ns	<1	<5.95	<24.0	<60.0	**4.24**	**138**	<0.189	**66**	**5.4**	<0.472	<0.0945	<0.311	nd	nd	nd
	B21-6-12.5	12.5	Native	ns	<1	<4.98	<22.8	<57.1	**4.23**	**117**	<0.169	**62.9**	**4.3**	<0.423	<0.0846	<0.278	--	--	nd
B21-7	B21-7-5.0	5	Fill	ns	<1	<5.60	<25.2	<63.1	**9.65**	**145**	<0.170	**79.7**	**5.84**	<0.425	<0.0850	<0.287	nd	nd	nd
	B21-7-12.5	12.5	Native	ns	<1	<5.07	<21.9	<54.7	**6.87**	**122**	<0.162	**54.9**	**4.35**	<0.405	<0.0809	<0.282	--	--	nd
B21-8	B21-8-5.0	5	Fill	ns	<1	<5.94	<24.6	<61.6	**5.47**	**159**	<0.193	**76.5**	**5.6**	<0.483	<0.0965	<0.302	nd	nd	nd
B21-9	B21-9-2.5	2.5	Fill	ns	<1	<4.65	<22.1	<55.2	**8.14**	**122**	<0.148	**47.4**	**3.71**	<0.371	**1.07**	<0.251	nd	nd	nd
	B21-9-10.0	10	Native	ns	<1	<5.21	<22.8	<56.9	**3.78**	**88.7**	<0.164	**44.4**	**3.22**	<0.409	**0.105**	<0.291	--	--	nd
B21-10	B21-10-2.5	2.5	Fill	ns	<1	<5.25	<23.0	<57.5	**4.54**	**130**	<0.157	**57.9**	**16.6**	<0.392	**0.109**	<0.250	nd	nd	nd
	B21-10-17.5	17.5	Native	ns	<1	<7.30	<18.6	<46.5	**3.46**	**21**	<0.134	**17.2**	**1.25**	<0.335	<0.0669	<0.240	--	--	nd
B21-11	B21-11-2.5	2.5	Fill	ns	<1	<4.82	<21.9	<54.8	**4.82**	**118**	<0.155	**52.7**	**16.2**	<0.387	<0.0775	<0.271	nd	nd	nd
	B21-11-10.0	10	Native	ns	<1	<6.21	<27.8	<69.4	**4.29**	**180**	<0.193	**92.7**	**5.77**	<0.482	<0.0965	<0.341	nd	nd	nd
B21-12	B21-12-5.0	5	Fill	ns	<1	<5.65	<23.4	<58.4	**5.48**	**119**	<0.170	**49.6**	**4.42**	<0.426	<0.0851	<0.315	nd	nd	nd
	B21-12-17.5	17.5	Native	ns	<1	<4.80	<20.2	<50.4	**1.45**	**39**	<0.155	**26.6**	**1.63**	<0.387	<0.0774	<0.229	nd	nd	nd

Exploration Location[1]	Sample ID	Depth (feet bgs)	Location of Sample Relative to Fill/Native Soil and Groundwater	Field Screening[2]		Petroleum Hydrocarbons (mg/kg)			RCRA 8 Metals[3] (mg/kg)								PAHs (mg/kg)		VOCs[4] (mg/kg)
				Sheen	Headspace (ppm)	Gasoline Range[5]	Diesel Range[6]	Heavy Oil Range[6]	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Non-Carcinogenic[7]	Carcinogenic[8]	
B21-13	B21-13-2.5	2.5	Fill	ns	<1	<5.29	<24.6	<61.5	**10.1**	**113**	**0.205**	**60.8**	**10.7**	<0.469	<0.0938	<0.276	nd	nd	nd
	B21-13-15.0	15	Native	ns	<1	<6.10	<19.1	<47.7	**2.14**	**21.5**	<0.137	**20.7**	**1.05**	<0.342	<0.0683	<0.225	--	--	nd
B21-14	B21-14-2.5	2.5	Fill	ns	<1	<4.90	<22.3	<55.8	**2.42**	**67.1**	<0.160	**43.6**	**3.02**	<0.399	<0.0798	<0.274	nd	nd	nd
	B21-14-12.5	12.5	Native	ns	<1	<5.15	<21.4	<53.5	**3.44**	**90.4**	<0.227	**48.2**	**3.8**	**0.736**	<0.0114	<0.222	--	--	nd
B21-15	B21-15-5.0	5	Fill	ns	<1	<5.11	<20.6	<51.5	**3.14**	**71.8**	<0.178	**41.7**	**2.74**	<0.445	<0.0890	<0.269	nd	nd	nd
	B21-15-12.5	12.5	Native	ns	<1	<6.07	<19.1	<47.7	**1.39**	**44.1**	<0.171	**31.3**	**1.47**	<0.427	<0.0855	<0.277	--	--	nd
B21-16	B21-16-2.5	2.5	Fill	ns	<1	<5.05	<22.1	<55.3	**5.54**	**130**	<0.194	**61.9**	**11.1**	<0.486	<0.0972	<0.287	nd	nd	nd
	B21-16-10.0	10	Native	ns	<1	<6.73	<19.5	<48.7	**1.15**	**36.5**	<0.167	**26.5**	**1.2**	<0.419	<0.0837	<0.232	--	--	nd
MTCA Method A or B Cleanup Level for Unrestricted Land Use						30/100[9]	2,000	2,000	20	16,000	2	2,000[10]	250	400	400	2	varies	100	varies

Notes:

[1]Approximate exploration locations shown on the attached figure. Chemical analytical testing by Fremont Analytical in Seattle, Washington. Samples were obtained between October 4 and 11, 2012.

[2]Field screening methods are described in Appendix B.

[3]Total metals analyzed by EPA 6010B/7471A.

[4]Volatile organic compounds (VOCs) and benzene (B), ethylbenzene (E), toluene (T) and total xylenes (X) analyzed by EPA Method 8260B. For VOCs, only detected compounds are presented in the table. See the

[5]Gasoline-range hydrocarbons analyzed by petroleum hydrocarbon identification using Northwest Method NWTPH-HCID.

[6]Diesel- and heavy oil-range hydrocarbons analyzed by Northwest Method NWTPH-Dx Extended with a silica gel cleanup or petroleum hydrocarbon identification using Northwest Method NWTPH-HCID.

[7]Polycyclic aromatic hydrocarbons (PAHs) analyzed by EPA Method 8270D/SIM. See the laboratory report for the full list of compounds analyzed.

[8]Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs) analyzed by EPA Method 8270D/SIM. Total cPAHs calculated using the toxicity equivalency (TEQ) methodology specified in WAC 173-340-780(8). cPAHs that were not detected were assigned

[9]When benzene is present, the gasoline range cleanup level is 30 mg/kg. When benzene is not present the gasoline range cleanup level is 100 mg/kg.

[10]Cleanup level for Chromium III. The published Background Soil Metals Concentration for Chromium is 42 mg/kg.

mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
ns = no sheen, ss = slight sheen, ms = moderate sheen
Bolding indicates analyte was detected.

bgs = below ground surface
-- = not tested
nd = not detected

Table 2

Groundwater Chemical Analytical Data (Petroleum Hydrocarbons and Metals)

Project Rufus 2.0
Block 21, Denny Triangle
Seattle, Washington

Monitoring Well and Sample ID[1]	Sample Date	Well Screen Depth (feet bgs)	Petroleum Hydrocarbons (µg/L)			VOCs[4] (µg/L)	RCRA 8 Metals[5] (µg/L)							
			Gasoline Range[2]	Diesel Range[3]	Heavy Oil Range[3]		Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury
Block 21														
MW21-1	10/15/2012	75.0 - 94.8	<50.0	<50.0	<100	nd	<1.00	**28.3**	<0.200	<0.500	<1.00	**1.30**	**0.444**	<0.100
MW21-2	10/15/2012	90.0 - 109.8	<50.0	<50.0	<100	nd	**1.06**	**29.3**	<0.200	<0.500	<1.00	**1.19**	**0.426**	**0.306**
MW21-3	10/15/2012	80.0 - 99.8	<50.0	<50.0	<100	nd	<1.00	**32.4**	<0.200	<0.500	<1.00	**2.09**	<0.200	**0.349**
Unrestricted Land Use			800/1000[6]	500	500	varies	5	3,200	5	50	15	80	80	2

Notes:

[1]Approximate exploration locations shown on the attached figures. Chemical analytical testing by Fremont Analytical in Seattle, Washington.

[2]Gasoline-range hydrocarbons analyzed by petroleum hydrocarbon identification using Northwest Method NWTPH-HCID.

[3]Diesel- and heavy oil-range hydrocarbons analyzed by Northwest Method NWTPH-Dx Extended with a silica gel cleanup or petroleum hydrocarbon identification using Northwest Method NWTPH-HCID.

[4]Volatile organic compounds (VOCs) and benzene (B), ethylbenzene (E), toluene (T) and total xylenes (X) analyzed by EPA Method 8260B. For VOCs, only detected compounds are presented in the table. See the laboratory report for the full list of compounds analyzed and detection limits.

[5]Total metals analyzed by EPA 6010B/7471A.

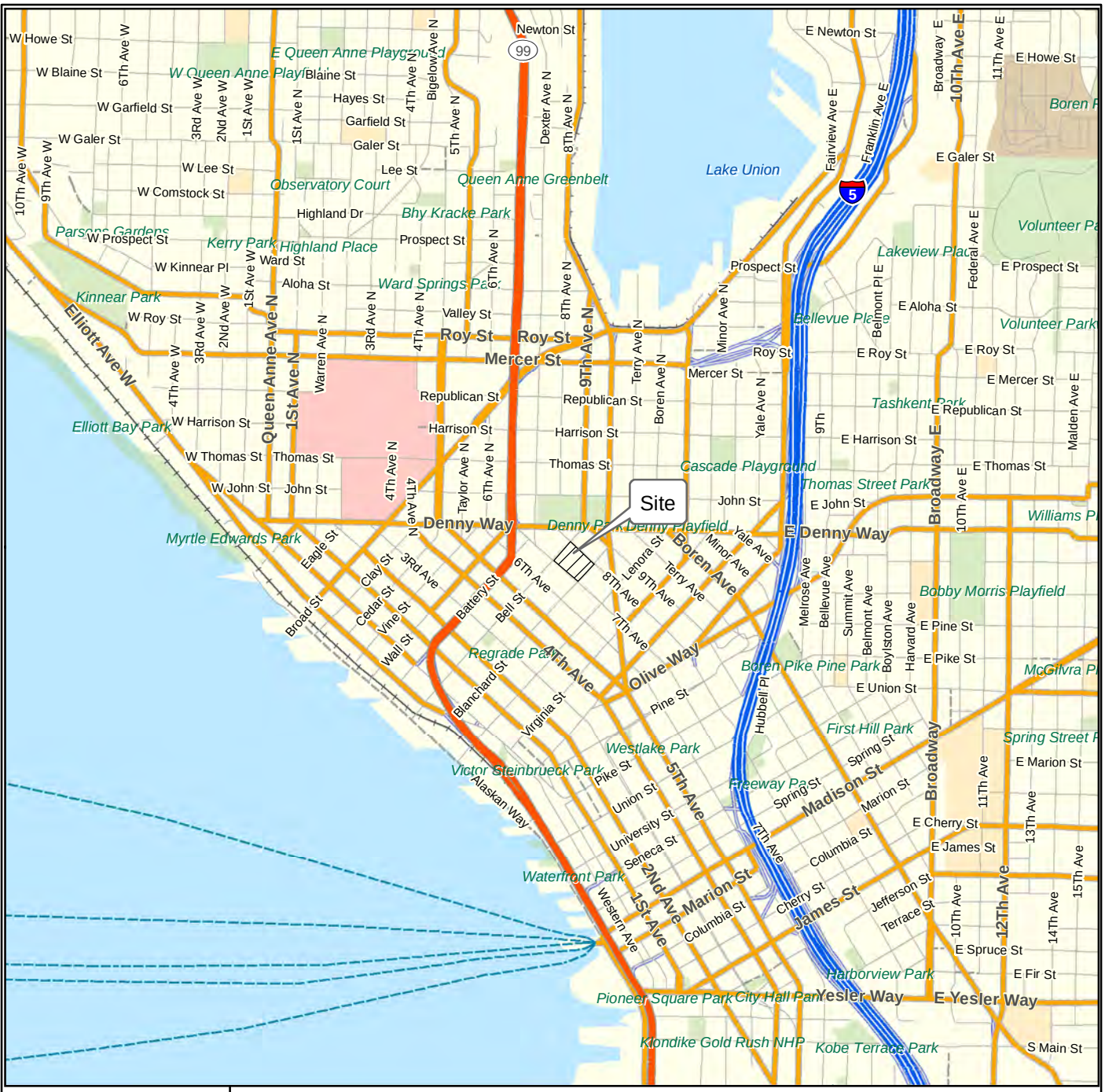
[6]When benzene is present, the gasoline range cleanup level is 800 µg/L. When benzene is not present the gasoline range cleanup level is 1000 µg/L.

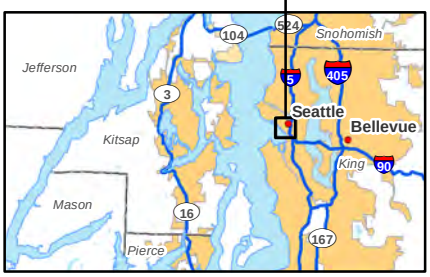
nd = not detected

bgs = below ground surface

µg/L = micrograms per liter

Bolding indicates analyte was detected. Shading indicates analyte was detected at a concentration greater than the MTCA cleanup level.





N
W E
S

2,000 0 2,000

Feet

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Data Sources: ESRI Data & Maps, Street Maps 2005

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

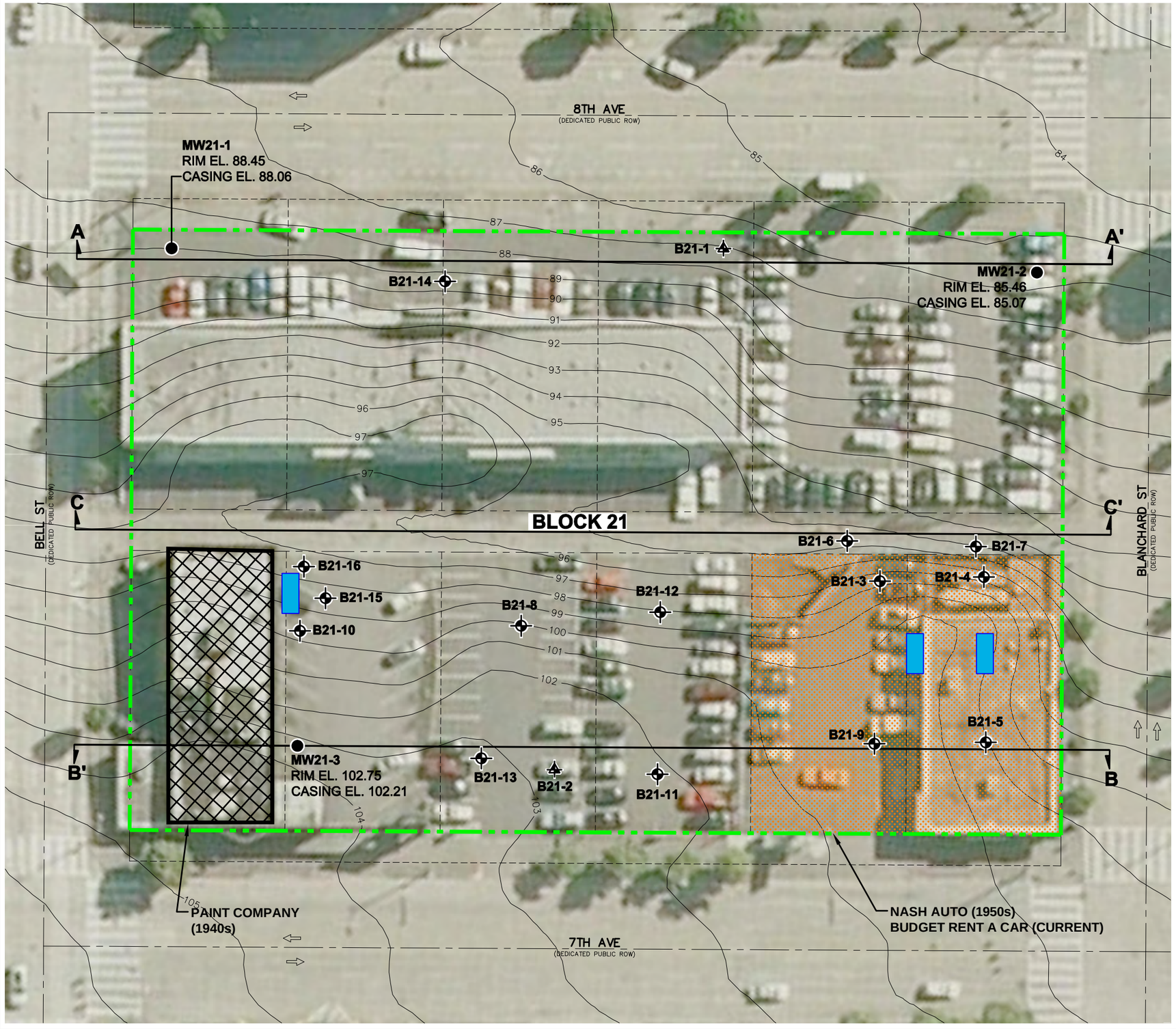
Vicinity Map

Rufus 2.0 Block 21
Seattle, Washington

GeoEngineers

Figure 1

Office: Redmond Path: \\red\projects\20\20434001\GIS\20434001111_F1_VicinityMap.mxd Map Revised: November 08, 2012 EL



Legend

- B21-1 — Boring Completed for this Study
- MW21-1 — Monitoring Well Completed for this Study
- B21-1 — Deep Hollow-Stem Auger Boring Completed for this Study
- A — A' — Cross-Section Location
- Subject Property Boundary
- Historical Auto Repair Building Footprint
- Possible or Known Former UST Area
- Other Use of Potential Concern as Indicated

N E S W

40 0 40
FEET

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Reference: Site survey CAD file "XS-SUR.dwg" provided by Bush, Roed & Hitchings , Inc., dated March 2012. Aerial photo from Aerial Express, 2009. Contour data from Puget Sound LIDAR Consortium, 2000.

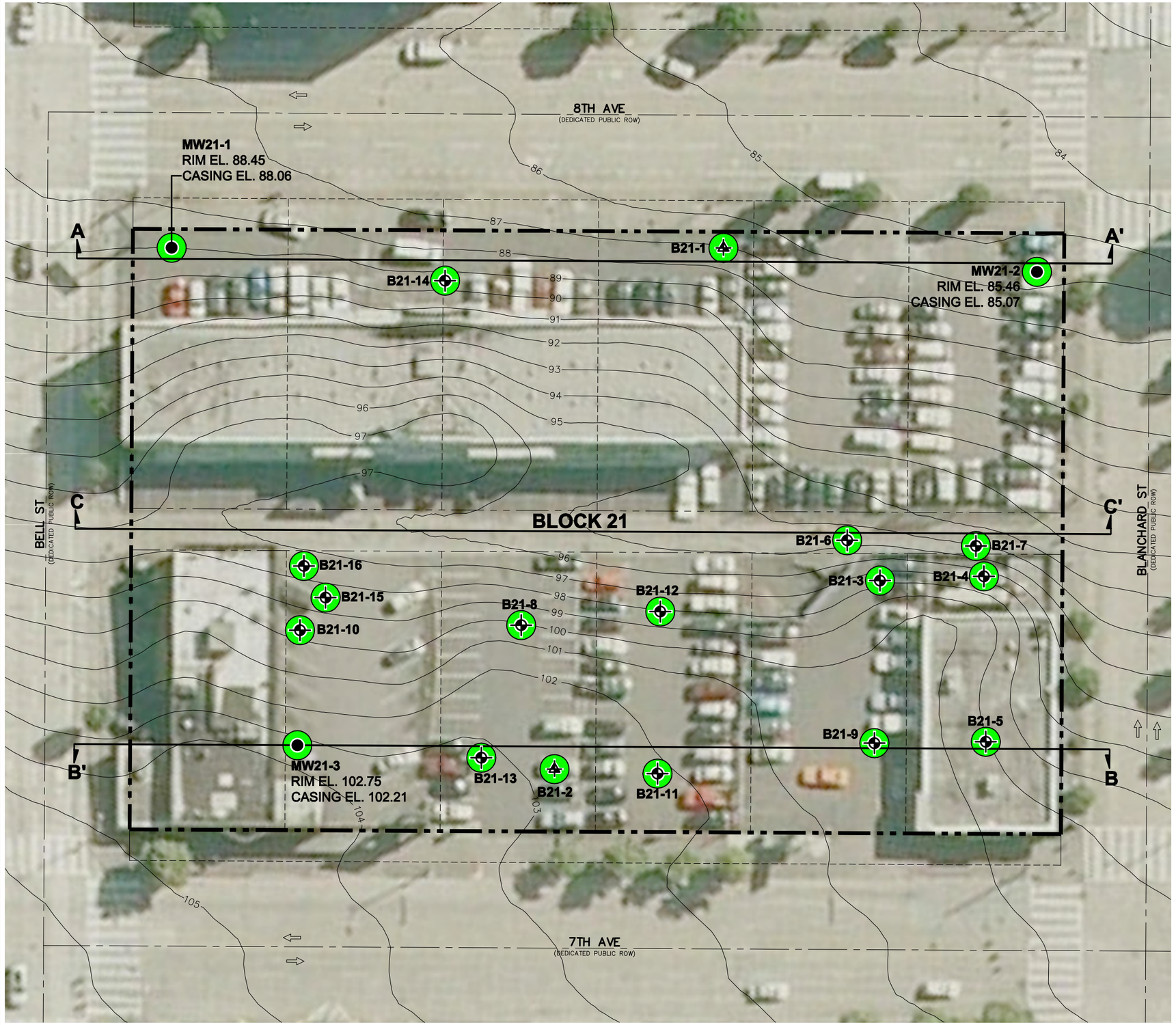
Overview Site Plan and Historical Sources of Potential Contamination

Rufus 2.0 Block 21
Seattle, Washington

GeoEngineers

Figure 2

P:\20\20434001\CAD\II\Task 200 Environmental\20434001-II Task 200 Site Plan.dwg\TAB:Site Plan modified by tmichaud on Nov 14, 2012 - 17:12



Legend

- B21-1 — Boring Completed for this Study
- MW21-1 — Monitoring Well Completed for this Study
- B21-1 — Deep Hollow-Stem Auger Boring Completed for this Study
- A — A' — Cross-Section Location
- Subject Property Boundary
- Contaminants of concern were not detected. Metals were detected at concentrations similar to natural background concentrations.

N W E S

40 0 40
FEET

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.

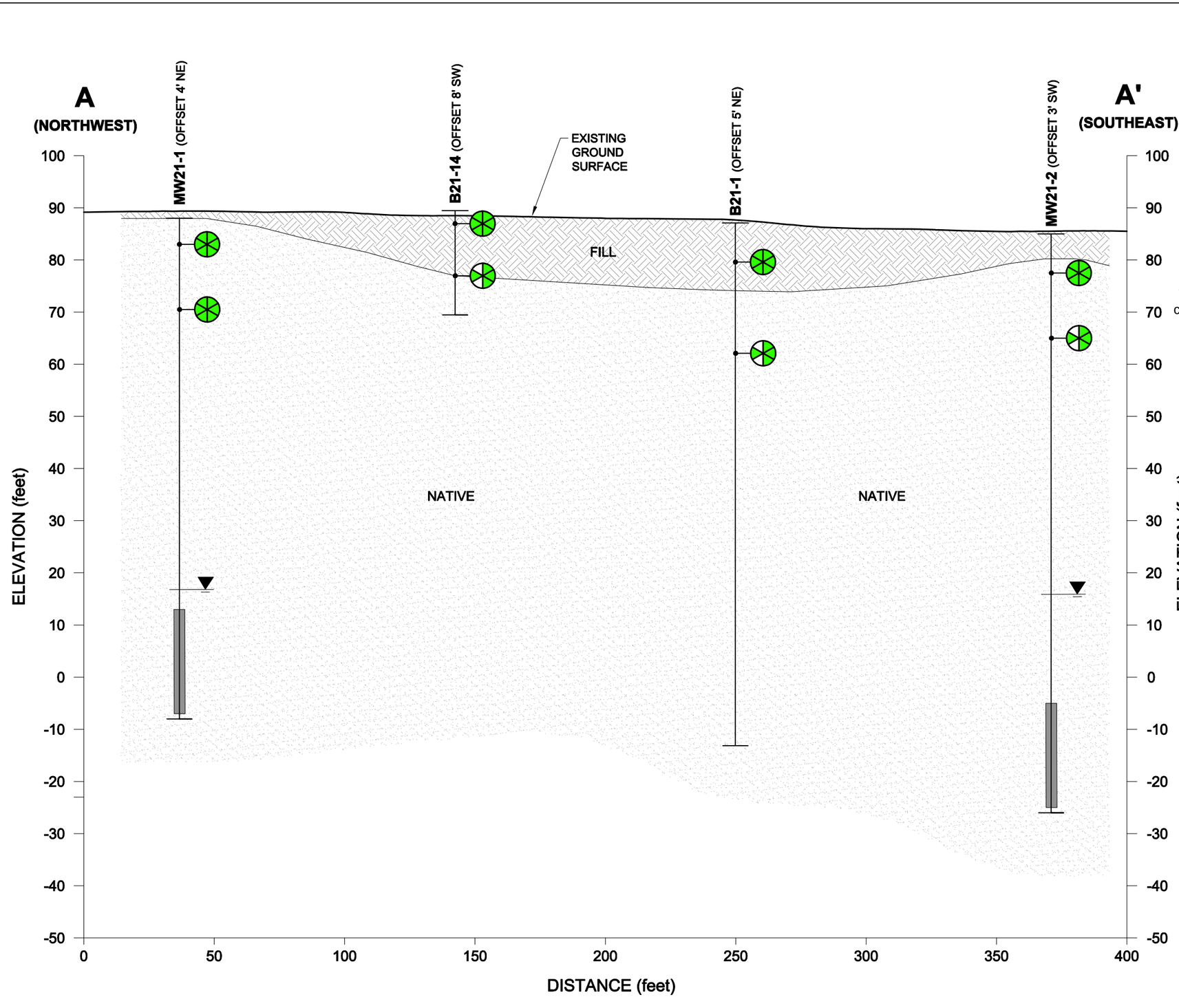
Reference: Site survey CAD file "XS-SUR.dwg" provided by Bush, Roed & Hitchings , Inc., dated March 2012. Aerial photo from Aerial Express, 2009. Contour data from Puget Sound LIDAR Consortium, 2000.

Soil Contamination Identified during 2012 Subsurface Exploration

Rufus 2.0 Block 21
Seattle, Washington

GeoEngineers | **Figure 3**

P:\20\20434001\CAD\11\Task 200 Environmental\20434001-11 Task 200 Soil Contamination Identified.dwg\TAB:Site Plan Modified by TMichaud on Nov 14, 2012 - 11:13



Legend

B21-1 — Boring ID

Inferred Soil Contact

Soil Sample Location Submitted for Analytical Testing

Groundwater Level Observed in Piezometer (10/15/2012)

Well Screen Interval

Chemical Analytical Results of Discrete Soil Samples

PAHs — Diesel-Range Petroleum Hydrocarbons
VOCs — Gasoline-Range Petroleum Hydrocarbons
cPAHs — Heavy Oil-Range Petroleum Hydrocarbons

Detected at a concentration greater than the MTCA Method A cleanup level.

Detected at a concentration less than the MTCA Method A cleanup level.

Not Detected

Not Analyzed

40 0 40
Horizontal Scale in Feet

20 0 20
Vertical Scale in Feet
Vertical Exaggeration: 2X

Notes

1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
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.

Reference: Existing ground surface data from Puget Sound LIDAR Consortium, 2000.

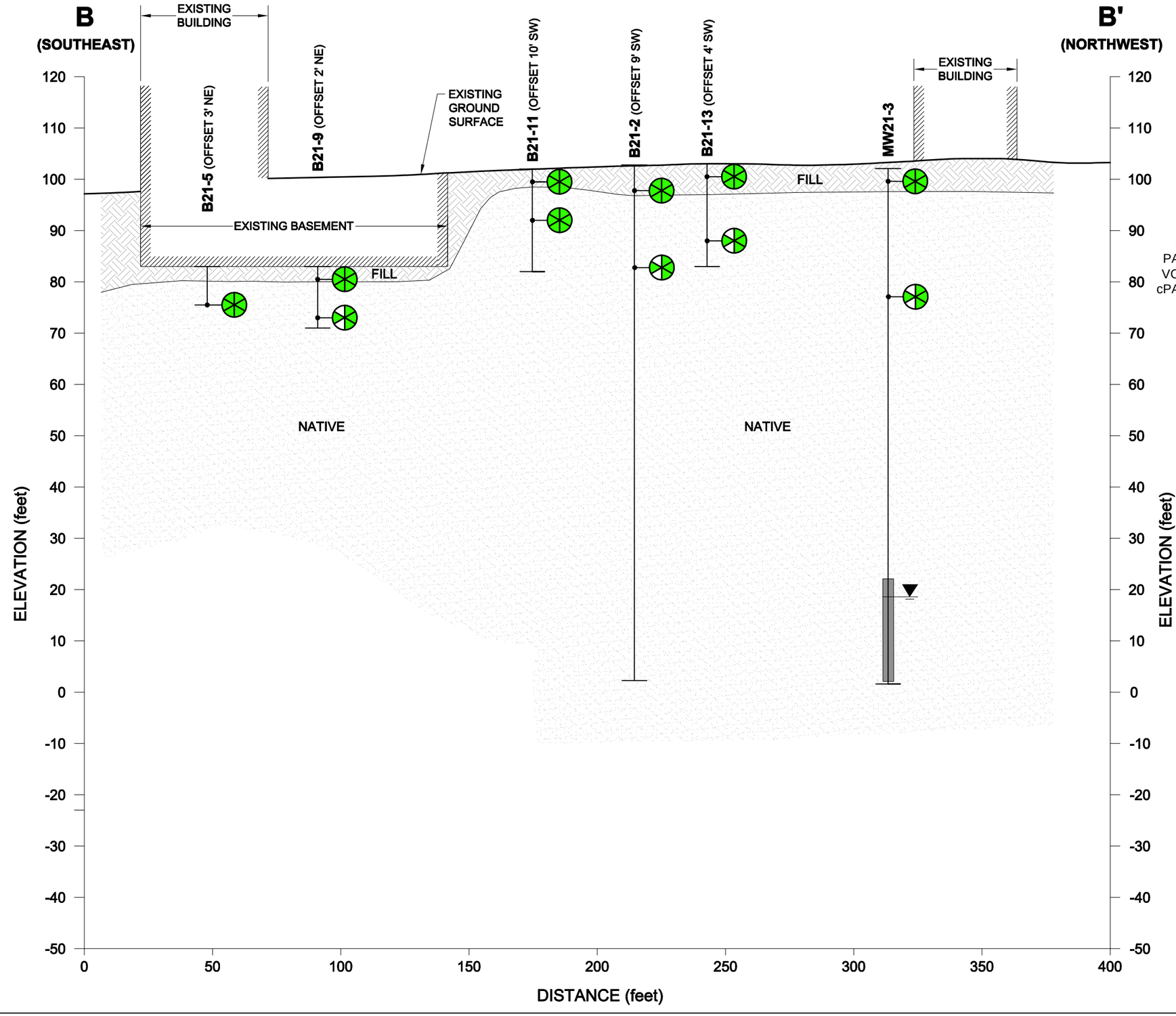
Cross-Section A-A'

Rufus 2.0 Block 21
Seattle, Washington

GeoEngineers

Figure 4

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Legend

B21-1 — Boring ID

Inferred Soil Contact

Soil Sample Location Submitted for Analytical Testing

Groundwater Level Observed in Piezometer (10/15/2012)

Well Screen Interval

Chemical Analytical Results of Discrete Soil Samples

PAHs — Diesel-Range Petroleum Hydrocarbons
VOCs — Gasoline-Range Petroleum Hydrocarbons
cPAHs — Heavy Oil-Range Petroleum Hydrocarbons

Detected at a concentration greater than the MTCA Method A cleanup level.

Detected at a concentration less than the MTCA Method A cleanup level.

Not Detected

Not Analyzed

40 0 40
Horizontal Scale in Feet

20 0 20
Vertical Scale in Feet
Vertical Exaggeration: 2X

Notes

1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
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.

Reference: Existing ground surface data from Puget Sound LIDAR Consortium, 2000.

Cross-Section B-B'

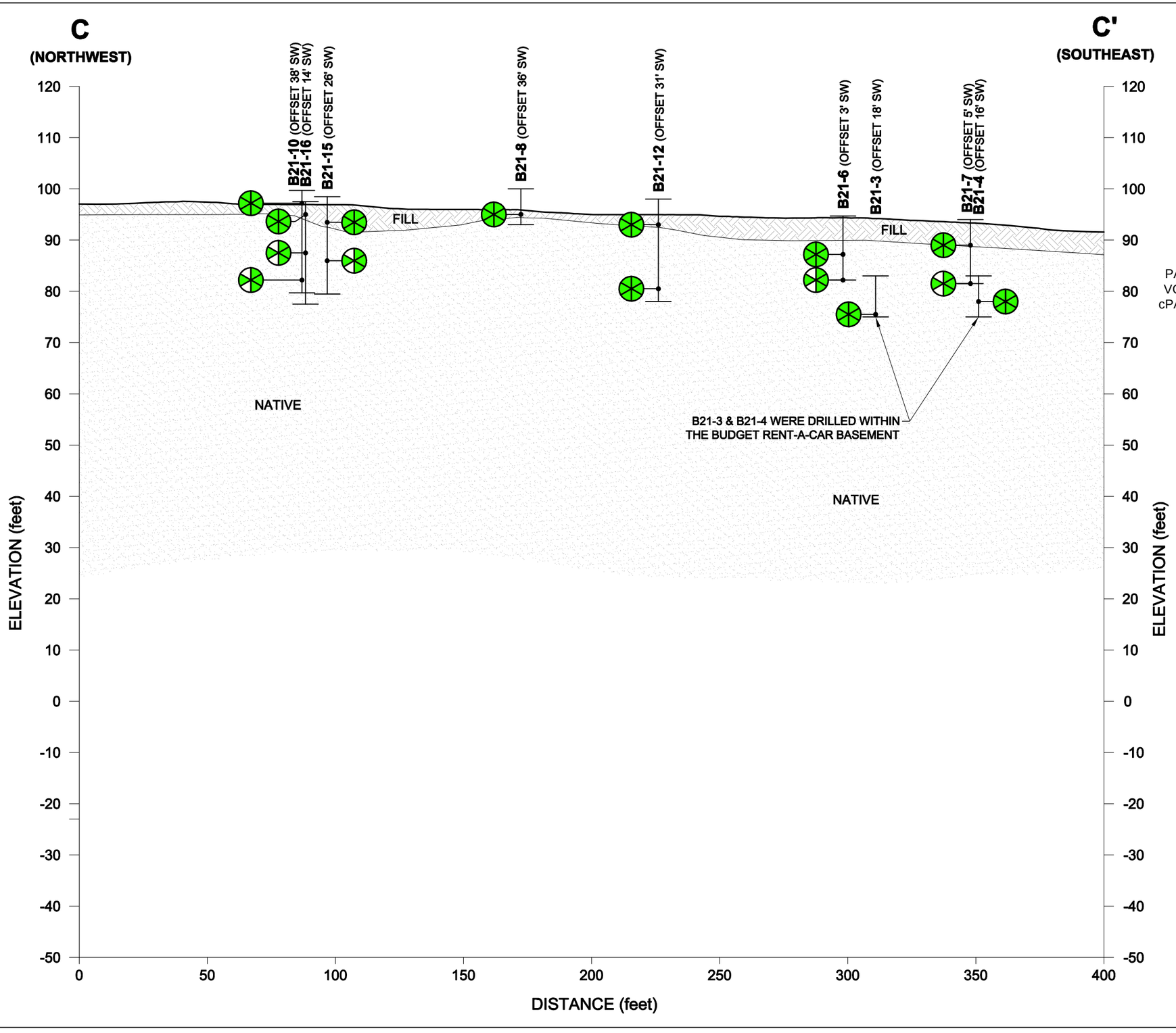
Rufus 2.0 Block 21
Seattle, Washington

GeoEngineers

Figure 5

P:\20\20434001\CAD\II\TASK 200 ENVIRONMENTAL\20434001-II TASK 200 CROSS-SECTIONS.DWG\TAB:BB MODIFIED BY TMICHAUD ON NOV 14, 2012 - 17:06

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Legend

B21-1 — Boring ID

Inferred Soil Contact

Soil Sample Location Submitted for Analytical Testing

Groundwater Level Observed in Piezometer (10/15/2012)

Well Screen Interval

Chemical Analytical Results of Discrete Soil Samples

PAHs — Diesel-Range Petroleum Hydrocarbons
VOCs — Gasoline-Range Petroleum Hydrocarbons
cPAHs — Heavy Oil-Range Petroleum Hydrocarbons

Detected at a concentration greater than the MTCA Method A cleanup level.

Detected at a concentration less than the MTCA Method A cleanup level.

Not Detected

Not Analyzed

40 0 40
Horizontal Scale in Feet

20 0 20
Vertical Scale in Feet
Vertical Exaggeration: 2X

Notes

1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
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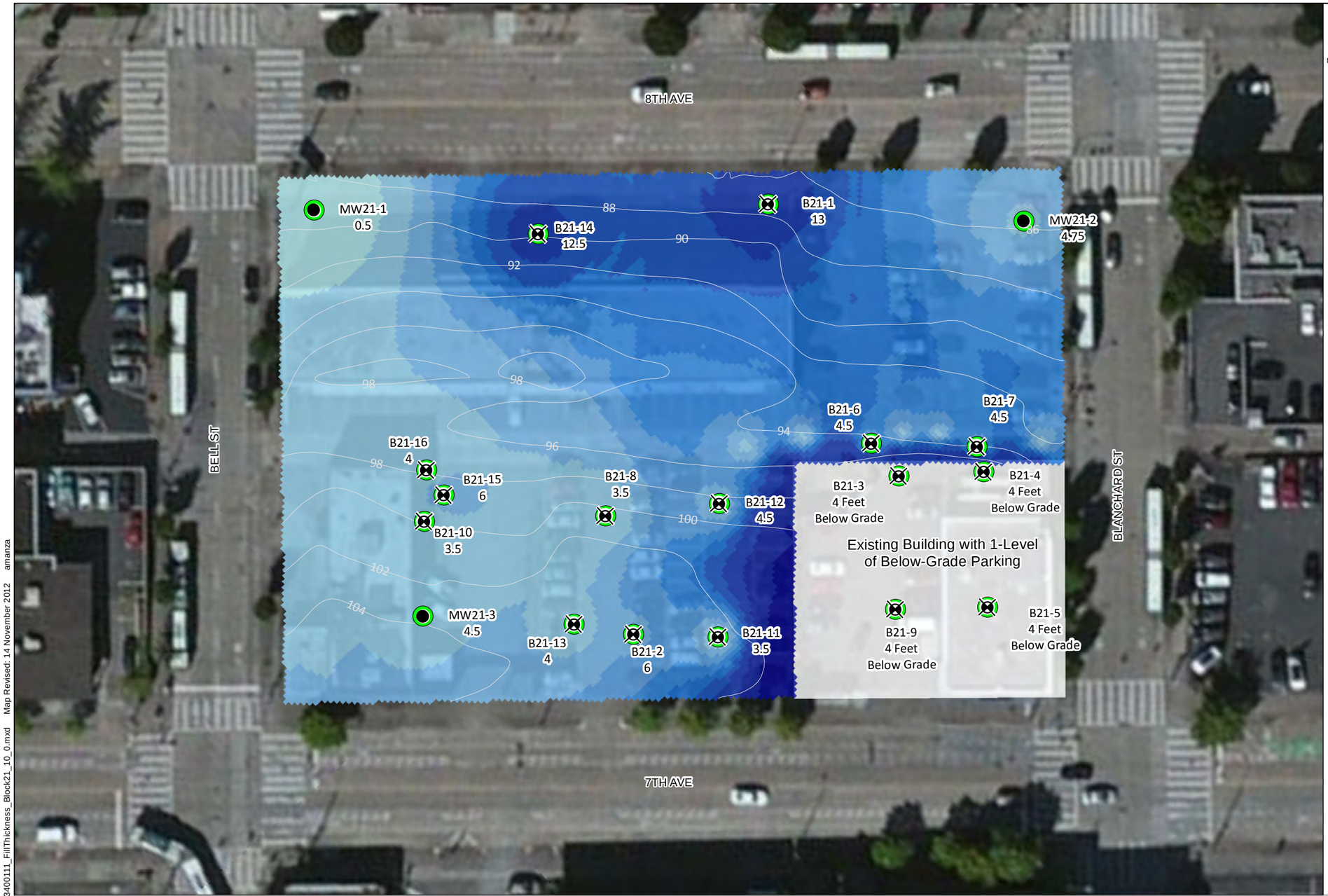
Reference: Existing ground surface data from Puget Sound LIDAR Consortium, 2000.

Cross-Section C-C'

Rufus 2.0 Development
Seattle, Washington

GeoEngineers

Figure 6



Data Source: Current site elevation contours generated from LiDAR provided by King County (2003) Aerial from ESRI/Microsoft BING.

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

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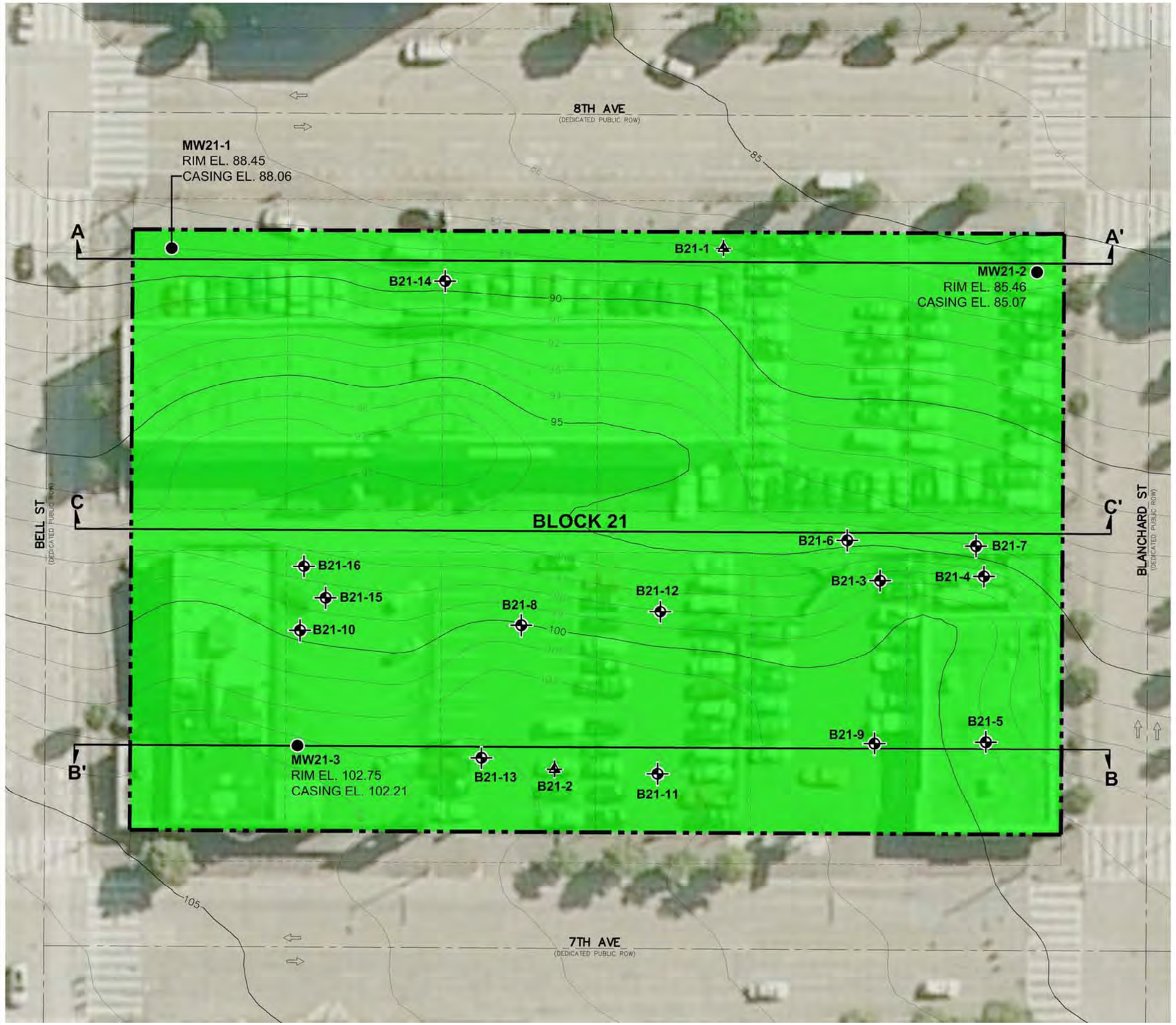
Interpolated Fill Thickness and Contaminants of Concern

Rufus 2.0 Block 21
Seattle, Washington

GeoEngineers

Figure 7

Path: \\sea\projects\20\2043400\1\GIS\2043400111_FillThickness_Block21_10_0.mxd Map Revised: 14 November 2012 amanza



Legend

- B21-1 — Boring Completed for this Study
- MW21-1 — Monitoring Well Completed for this Study
- B21-1 — Deep Hollow-Stem Auger Boring Completed for this Study
- A — A' — Cross-Section Location
- Subject Property Boundary
- Contaminants of concern either not detected or detected similar to natural background concentrations in fill soil. Soil excavated from these locations may be disposed of as "clean" soil, at the discretion of the owner.

N W E S

40 0 40
FEET

Notes

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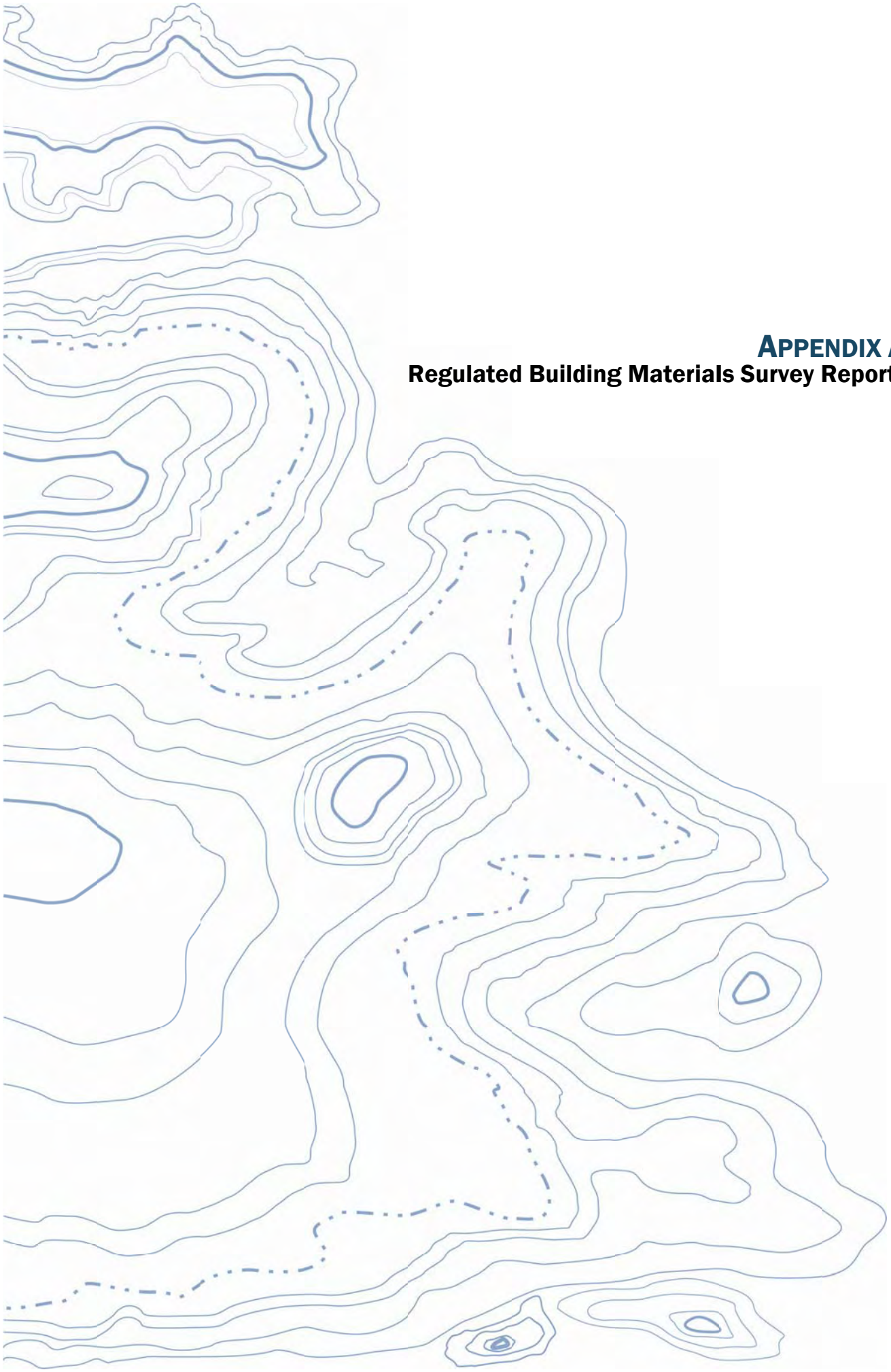
Reference: Site survey CAD file "XS-SUR.dwg" provided by Bush, Roed & Hitchings , Inc., dated March 2012. Aerial photo from Aerial Express, 2009. Contour data from Puget Sound LIDAR Consortium, 2000.

Soil Management Categories

Rufus 2.0 Block 21
Seattle, Washington

GeoEngineers | **Figure 8**

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APPENDIX A
Regulated Building Materials Survey Reports

PACIFIC RIM ENVIRONMENTAL, INC.

Regulated Building Material Survey

Block 21 – Cornish College Dorm
2213 8th Avenue
Seattle, WA



Performed for:

GeoEngineers, Inc.
Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, WA 98101

Prepared By:

DRAFT

Todd P. Carter, AHERA Inspector
CTED Lead Risk Assessor

Date Prepared: 11/12/2012
PRE#: 14762.01

Seattle
www.pacrimenv.com
Anchorage

6510 Southcenter Blvd., Ste. #4
Seattle, WA 98188

Phone (206) 244-8965
Fax (206) 244-9096

Table of Contents

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Section 2.0 Survey Narrative 3-4

Section 3.0 Statement of Compliance 5

Section 4.0 Lead-Based Paint Screening Summary 6

Section 5.0 Universal Waste Inventory 7

Appendix A: Asbestos Sample Summary

Appendix B: Bulk Sample Analysis Report

Appendix C: Sample Location Drawings and Photos

Appendix D: XRF Data Sheets

Appendix E: XRF Performance Characteristic Sheet

Appendix F: Universal Waste Rule WAC 173-303-573

Appendix G: Inspector/Laboratory Certifications

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Section 1.0 Scope of Work
Block 21 - Cornish College Dorms - 2213 8th Avenue, Seattle, WA

Pacific Rim Environmental (PacRim) performed a limited regulated building material survey for Asbestos, Lead-based Paint and Universal Waste at the commercial structure located at 2213 8th Avenue in Seattle, WA.

Site: The Site is occupied by a three-story, approximately 34,560 square foot masonry building constructed in 1957, originally as a motel. The building is currently used as a student dormitory.

Limitations: The building was occupied at time of inspection. Inspection and sampling was limited to accessible materials using discreet sample collection procedures. Additional inspection and destructive sampling must be performed once the building is vacated as part of the project design phase.

Field inspection, data collection, and report generation were performed according to the following:

Scope of Work

Asbestos-Containing Materials (ACM)

1. Bulk sampling and analysis of suspect asbestos-containing materials (ACM).
2. Analysis of suspect ACM by a NVLAP accredited laboratory.
3. Quantity estimates of ACM.
4. Review of existing survey report
5. Written report including recommendations based on the technician's observations, sample descriptions, and sample location.
6. Statement of Compliance with W.A.C. 296-62-07721 Sign-off form.

Lead-Based Paints (LBP)

7. Perform limited screening of suspect lead-based paints using XRF.
8. Written report including: Sample descriptions, conditions, locations, analytical results, and recommendations. (**See Section 4.0 for discussion of LBP conditions**)

Universal Waste Inventory

8. Inspect and inventory lights and equipment to identify fixture and lamp type to determine presence of PCB and/or mercury.

The survey was intended to identify possible asbestos-containing materials (ACM) on the interior and exterior of the building. This inspection covered only those areas, which were exposed and/or physically accessible to the inspector. Materials uncovered during the course of demolition, renovation, or maintenance activities that are not identified in this inspection report must be presumed to contain asbestos until PLM analysis proves that this material is not asbestos-containing.

This survey is not intended for, nor should be used as a design specification. The Asbestos in Schools Hazard Amendment and Reauthorization Act (ASHARA), effective November 20, 1990, expanded accreditation requirements to apply to persons who work with asbestos in public and commercial buildings as well as schools. Specifically, ASHARA expanded the Toxic Substances Control Act (TSCA) Section 206 (a) (1) and (3) to require accreditation for any person who designs or conducts a response action with respect to friable ACM in a building. TSCA Section 207 provides for civil penalties of $5,000 for each day of a violation for not employing accredited individuals to design and conduct response actions. Sampling of suspect asbestos-containing materials was conducted as prescribed in 40 CFR 763.86.

Suspect asbestos-containing materials within the structure were identified and classified as a surfacing material, thermal system insulation, or miscellaneous materials. Surfacing materials are those, which are either spray applied or troweled-on for acoustical, decorative, or fireproofing purposes. Thermal system insulation (TSI) is insulation used to inhibit heat transfer or to prevent condensation on pipes, boilers, tanks, ducts and various other components. Miscellaneous materials include all other materials not included in the above categories such as floor tile, ceiling tile, roofing felt, cementitious materials, wallboard systems and products such as caulking, mastics and putties.

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Section 2.0 Survey Narrative
Block 21 – Cornish College Dorms - 2213 8th Avenue, Seattle, WA

Bulk samples collected were submitted for sample analysis in accordance with method EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk building Materials". Analyses were performed in Pacific Rim Environmental Inc.'s NVLAP Accredited Laboratory (Lab Code 101631-0). Materials are positive for asbestos if they are found to contain greater than 1% or 1% asbestos.

A total of forty-seven (47) samples were collected and submitted for PLM laboratory analysis. Twenty-five (25) of these samples were found to contain greater than 1% asbestos

Thermal Systems Insulation (TSI)

At the time of inspection, no access to TSI materials was available.

If during the course of wall, ceiling or floor demolition, any TSI materials that are not listed in this report are uncovered, sampling ***must*** be performed or the material presumed asbestos containing prior to disturbing these materials.

Surface Materials

Suspect asbestos-containing **ceiling texture** on plaster was identified on ceiling of the units, storage rooms, workout room, 1st floor Men's and Women's bathrooms, laundry room, stairwells, hallways, and kitchen. The materials were sampled and ***found to contain 1-3% Chrysotile Asbestos.*** (Sample #01, 06, 09, 11, 13, 15, 17, 19, 24, 28, 32, 34, 38, & 40)

Suspect asbestos-containing **texture** on plaster was identified on the walls in the 1st floor Men's and Women's bathrooms. The material was sampled and ***found to contain 1-3% Chrysotile Asbestos in the texture.*** (Sample #29)

Suspect asbestos-containing **plaster on GWB** with or without wallpaper was identified in the Units, storage room, stairwells, workout room, kitchen and laundry room column. The material was sampled and **no asbestos was detected.** (Sample #02, 04, 07, 08, 10, 12, 14, 16, 18, 20, 21, 25, 27, 35, 39 & 42)

Suspect asbestos-containing **GWB** was identified in the storage room, workout room, and front reception area. The materials were sampled and **no asbestos was detected.** (Sample #05, 26, 37)

Suspect asbestos-containing **skim coat on plaster** was identified in the laundry room. The material was sampled and **no asbestos was detected.** (Sample #33)

If during the course of wall, ceiling or floor demolition, any surfacing materials not identified in this report are uncovered, sampling ***must*** be performed or the material presumed asbestos containing prior to disturbing these materials.

Miscellaneous Materials

Suspect asbestos-containing **12" tile and mastic** was identified on the storage room floor. The material was sampled and **no asbestos was detected.** (Sample #03)

Suspect asbestos-containing **9" tile and mastic** was identified in the stairwells, workout room and the 1st floor Men's and Women's bathroom. The materials were sampled and ***found to contain 7-10% Chrysotile Asbestos in the tile.*** (Sample #22, 23, 31, & 36)

Suspect asbestos-containing **sheet vinyl flooring with mastic** was identified in the 1st floor Men's and Women's bathroom. The material was sampled and ***found to contain 10-15% Chrysotile Asbestos in the floor tile.*** (Sample #30)

Suspect asbestos-containing **silver coat and tar** was identified on the walkway roof overhang. The material was sampled and ***found to contain 1-3% Chrysotile Asbestos in the silver coat.*** (Sample #41)

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Surface Materials – Continue

Suspect asbestos-containing **rolled roofing and tar sealant with paper** was identified on the roof at the access hatch. The material was sampled and **no asbestos was detected.** (Sample #43)

Suspect asbestos-containing **window putty** was identified throughout the structure. The materials were sampled and ***found to contain 3-5% Chrysotile Asbestos.*** (Sample #44 & 46)

Suspect asbestos-containing **coating** on exterior walls was identified throughout the structure. The materials were sampled and ***found to contain 1-5% Chrysotile Asbestos in the tar layer.*** (Sample #45 & 47)

If during the course of wall, ceiling or floor demolition or roof demolition, any miscellaneous materials that are not listed in this report are uncovered, sampling ***must*** be performed or the material presumed asbestos containing prior to disturbing these materials.

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Section 3.0 Statement of Compliance
Block 21 – Cornish College Dorms - 2213 8th Avenue, Seattle, WA

In accordance with W.A.C. 296-62-07721 and PSCAA Regulation III, Article 4, Pacific Rim Environmental, Inc. performed an asbestos survey of the subject structure Commercial Building located at 2213 8th Avenue in Seattle, WA.

Should employees or contract personnel encounter any suspect asbestos-containing materials (ACM) it is their responsibility to:

1. Contact a representative of the owner.
2. Consult the inspection report to determine whether or not the suspect material contains asbestos.
3. If the suspect material does not appear in the inspection report, then that material was not sampled and must be presumed to contain asbestos until proven otherwise by sampling and PLM analysis.
4. Ensure that all employees and contractors are informed and advised of the location and type of materials that contain asbestos.

The following asbestos-containing materials were identified at the subject property:

- **Ceiling Texture (Units, Storage Room, Stairwells, Work Out Room, Men's/Women's Bathroom, Laundry, Kitchen)**
- **9" Red Tile and Mastic (Stairwell and Work Out Room)**
- **Green SVF and Mastic (Men's and Women's Bathroom)**
- **Silver Coating (Roof Overhang Walkway)**
- **Window Putty (Throughout)**
- **Tar Coating (Exterior Walls)**

The inspection report has been made available to me. I will inform all subcontractors of the location and types of materials containing asbestos. I am authorized to sign on behalf of my company.

Contractor:	_____	Owner's Rep:	_____
Signature:	_____	Signature:	_____
Print Name:	_____	Print Name:	_____
Title:	_____	Title:	_____
Date:	_____	Date:	_____

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Section 4.0 Lead-Based Paint Summary
Block 21 – Cornish College Dorms - 2213 8th Avenue, Seattle, WA

Lead based paint was identified on the following painted components. The presence of lead will require the collection of a TCLP sample to characterize the waste stream for disposal.

Lead was found in the following locations:

PRE#	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
23	Concrete	Exterior window sill	Unit 309, north window	White	Positive	1.3
30	Concrete	Exterior wall	Front of building	White	Positive	1.1
31	Concrete	Exterior window sill	Front of building	White	Positive	1.3

See XRF Data Sheets in Appendix D for a complete listing of all samples.

The only state rules or regulations that currently apply to lead-based paints are WAC 296-155-17603 Scope* and WAC 296-155-17607 Permissible Exposure Limit**. The WAC code states that if lead is detectable in the workplace in any quantity, initial air monitoring must be performed on employees doing demolition, renovation or remodeling work in areas found to have materials containing lead. Also, workers performing lead removal must be trained in accordance with WAC 296-155-17625.

The EPA/HUD standard uses a criterion of 5,000 parts per million (PPM) dry weight or 1.0 milligrams per square centimeter (1.0 mg/cm2) for lead-based paint. However, if lead is detected in any concentration, Federal OSHA and Washington State Department of Labor and Industries regulations will still apply, since neither agency has established a concentration of lead in paint below which the lead in construction standards do not apply.

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Section 5.0 Universal Waste Inventory
Block 21 – Cornish College Dorms - 2213 8th Avenue, Seattle, WA

Universal Waste Rules

The Universal Waste Rule (UWR) establishes alternative, streamlined waste management standards in place of most of the Dangerous Waste Regulations, Chapter 173-303 WAC, except for, WAC 173-303-050, 173-303-145 and 173-303-960. The following lamp types may be characterized as universal waste: fluorescent tubes, high intensity discharge (HID) lamps (mercury vapor, metal halide, high pressure sodium) and compact fluorescent.

Universal waste will be identified during the destructive sampling phase.

If found, universal waste must be removed and properly disposed of or recycled prior to building demolition
Disposal of individual lamps is not regulated. However disposal of large quantities of lamps is subject to dangerous waste regulations (WAC 173-303) and the waste stream must be subjected to TCLP (Toxicity Characteristic Leaching Procedure) analysis to determine the amount of mercury that could leach out of the waste. The TCLP limit for mercury is 0.2 mg/L.

PCBs belong to a broad family of organic chemicals known as chlorinated hydrocarbons. PCBs are produced by the combination of one or more chlorine atoms and a biphenyl molecule. PCBs range in consistency from heavy oily liquids to waxy solids. Prior to 1979, PCBs were widely used in electrical equipment such as transformers, capacitors, switches, and voltage regulators.

A copy of the Washington State Department of Ecology *Universal Waste Rule for Dangerous Waste Lamps WAC 173-303-573*, Publication # 00-04-020 is provided in Appendix F.

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Appendix A: **Asbestos Sample Summary**

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Pacific Rim Environmental, Inc

Asbestos Summary

Project Name / Address: Block 21 - Cornish College Dorm / 2213 8th Ave., Seattle, WA 98121

Project ID	Sample #	Sample Location	AHERA Category	Sample Description	Asbestos Type/%	Approximate Quant.
14762.01	01	Unit 306, ceiling	Surfacing	Texture on plaster	Chrysotile 1-3%	247 Sq. Ft.
14762.01	02	Unit 306, west wall	Surfacing	Wallpaper on plaster	None Detected (Both Layers)	N/A
14762.01	03	Storage room, floor	Miscellaneous	12" tile and mastic	None Detected (Both Layers)	N/A
14762.01	04	Storage room, east wall	Surfacing	Plaster on GWB	None Detected (All Layers)	N/A
14762.01	05	Storage room, east wall	Surfacing	GWB (wall interior)	None Detected	N/A
14762.01	06	Storage room, ceiling	Surfacing	Texture on plaster	Chrysotile 1-3%	126 Sq. Ft.
14762.01	07	Closet, ceiling	Surfacing	Plaster on GWB	None Detected (All Layers)	N/A
14762.01	08	Closet, east wall	Surfacing	Plaster on GWB	None Detected (All Layers)	N/A
14762.01	09	Unit 309, ceiling	Surfacing	Texture on plaster	Chrysotile 1-3%	324 Sq. Ft.
14762.01	10	Unit 309, west wall	Surfacing	Wallpaper on plaster	None Detected (Both Layers)	N/A
14762.01	11	Unit 208, ceiling	Surfacing	Texture on plaster	Layer 1 (Texture): None Detected Layer 2 (Texture): Chrysotile 1-3%	324 Sq. Ft.
14762.01	12	Unit 208, west wall	Surfacing	Wallpaper on plaster	None Detected (Both Layers)	N/A
14762.01	13	Unit 218, ceiling	Surfacing	Texture on plaster	Chrysotile 1-3%	304 Sq. Ft.
14762.01	14	Unit 218, north wall	Surfacing	Wallpaper on plaster	None Detected (All Layers)	N/A
14762.01	15	Unit 220, ceiling	Surfacing	Texture on plaster	Chrysotile 1-3%	247 Sq. Ft.

Project ID	Sample #	Sample Location	AHERA Category	Sample Description	Asbestos Type/%	Approximate Quant.
14762.01	16	Unit 220, north wall	Surfacing	Wallpaper on plaster	None Detected (All Layers)	N/A
14762.01	17	Unit 228, ceiling	Surfacing	Texture on plaster	Chrysotile 1-3%	247 Sq. Ft.
14762.01	18	Unit 228, south wall	Surfacing	Wallpaper on plaster	None Detected (All Layers)	N/A
14762.01	19	Unit 221, ceiling	Surfacing	Texture on plaster	Chrysotile 1-3%	247 Sq. Ft.
14762.01	20	Unit 221, south wall	Surfacing	Wallpaper on plaster	None Detected (All Layers)	N/A
14762.01	21	Stairwell, south end, west wall	Surfacing	Plaster	None Detected (Both Layers)	N/A
14762.01	22	Stairwell, south end, floor	Miscellaneous	9" red tile and mastic	Layer 1 (Tile): Chrysotile 7-10% Layer 2 & Layer 3: None Detected	80 Sq. Ft.
14762.01	23	Work out room floor, first floor	Miscellaneous	9" red tile and mastic	Layer 1 & Layer 3: None Detected Layer 2 (Tile): Chrysotile 10-15%	342 Sq. Ft.
14762.01	24	Work out room, ceiling	Surfacing	Texture on plaster	Chrysotile 1-3%	342 Sq. Ft.
14762.01	25	Work out room, west wall	Surfacing	Plaster	None Detected (Both Layers)	N/A
14762.01	26	Work out room, south wall	Surfacing	GWB	None Detected	N/A
14762.01	27	Work out room, south wall interior on beam	Surfacing	Plaster	None Detected (Both Layers)	N/A
14762.01	28	Men's/Women's bathroom, ceiling	Surfacing	Texture on plaster	Chrysotile 1-3%	130 Sq. Ft.
14762.01	29	Men's/Women's bathroom, east wall	Surfacing	Plaster	Layer 1 (Texture): Chrysotile 1-3% Layer 2 (Plaster): None Detected	368 Sq. Ft.
14762.01	30	Men's/Women's bathroom, floor	Miscellaneous	Green SVF and mastic	Layers 1 through 4: None Detected Layer 5 (Floor Tile): Chrysotile 10-15%	130 Sq. Ft.

Project ID	Sample #	Sample Location	AHERA Category	Sample Description	Asbestos Type/%	Approximate Quant.
14762.01	31	Men's/Women's bathroom, floor	Miscellaneous	9" red tile and mastic	Layer 1 (Tile): Chrysotile 10-15% Layer 2 (Mastic): None Detected	130 Sq. Ft.
14762.01	32	Laundry, ceiling	Surfacing	Texture on plaster	Layer 1 (Texture): Chrysotile 1-3% Layer 2 (Plaster): None Detected	399 Sq. Ft.
14762.01	33	Laundry, west wall	Surfacing	Skim coat on plaster	None Detected (Both Layers)	N/A
14762.01	34	West side stairwell, ceiling	Surfacing	Texture on plaster	Layer 1 (Texture): Chrysotile 1-3% Layer 2 (Plaster): None Detected	195 Sq. Ft.
14762.01	35	West side stairwell, north wall	Surfacing	Plaster	None Detected (Both Layers)	N/A
14762.01	36	West side stairwell, floor	Miscellaneous	9" red tile and mastic	Layer 1 & Layer 3: None Detected Layer 2 (Tile): Chrysotile 7-10%	195 Sq. Ft.
14762.01	37	Front reception area, south wall	Surfacing	GWB	None Detected (Both Layers)	N/A
14762.01	38	Kitchen, ceiling	Surfacing	Texture on plaster	Layer 1 (Texture): Chrysotile 1-3% Layer 2 (Plaster): None Detected	589 Sq. Ft.
14762.01	39	Kitchen, south wall	Surfacing	Plaster	None Detected (Both Layers)	N/A
14762.01	40	North hallway, first floor, ceiling	Surfacing	Texture on plaster	Layer 1 (Texture): Chrysotile 1-3% Layer 2 (Plaster): None Detected	1040 Sq. Ft.
14762.01	41	Walkway roof overhang, west side	Miscellaneous	Silver coat and tar	Layer 1 (Silver Coat): Chrysotile 1-3% Layer 2 (Tar-like material): None Detected	1040 Sq. Ft.
14762.01	42	Laundry storage room	Surfacing	Plaster on building column	None Detected (Both Layers)	N/A
14762.01	43	Roof at access hatch	Miscellaneous	Rolled roofing and tar sealant and paper	None Detected (Both Layers)	N/A
14762.01	44	East wall exterior, windows	Miscellaneous	Window putty	Chrysotile 3-5%	Through-out

Project ID	Sample #	Sample Location	AHERA Category	Sample Description	Asbestos Type/%	Approximate Quant.
14762.01	45	North exterior of building, wall	Miscellaneous	Coating on wall	Layer 1 (Tar): Chrysotile 1-3% Layer 2 (Plaster): None Detected	16,000 Sq. Ft.
14762.01	46	West wall exterior, windows	Miscellaneous	Window putty	Chrysotile 3-5%	Through-out
14762.01	47	West wall exterior	Miscellaneous	Coating on wall	Layer 1 & Layer 3: None Detected Layer 2 (Tar): Chrysotile 3-5%	See #45

Appendix B: **Bulk Sample Analysis Report**

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PACIFIC RIM ENVIRONMENTAL, INC.

BULK SAMPLE ANALYSIS REPORT

CLIENT:	**Geoengineers** 8410 154th Avenue NE Redmond, WA 98052	**PACRIM # :**	**14762.01**
		REPORT # :	2012-10-0128
		DATE RECEIVED :	10/04/2012-10/5/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 - Cornish College Dorm 2213 8th Avenue Seattle, WA 98121	**DATE ANALYZED :**	10/15/2012-10/18/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/18/2012
		TURNAROUND:	3 Days
SAMPLE DATE:	10/4/2012-10/5/2012	**PAGE :**	1 of 14

Attached are the results of analysis of 47 bulk samples submitted for asbestos identification: lab ID #2012-10-0128 through 2012-10-0174.

Samples were analyzed in accordance with method EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk Building Materials".

Unless otherwise noted, samples were inhomogeneous; subsamples of components were analyzed to achieve representative analysis. Separate layers of layered samples are analyzed and reported separately. Unless otherwise stated, asbestos content was quantified by calibrated visual estimation (CVES). CVES concentrations are reported in 2 to 3 percent ranges for fiber concentrations ranging from 1-10%, and 5 percent ranges for concentrations greater than 10%. Samples in which asbestos was not observed are reported as "none detected".

Limitations and Uncertainty:

Factors such as sample quality, sample size, interfering matrix material, fiber size, and fiber concentration contribute to the uncertainty of asbestos concentration measurements in bulk materials. Relative errors exceeding 100% may occur in samples containing <1-10% asbestos. Relative errors are typically below 30% in samples with greater than 10% asbestos, and approach zero as the asbestos concentration approaches 100%.

Asbestos fibers with diameters below approximately 0.25 micrometers are not detectable by PLM. These extremely fine fibers may occur in such products as floor tile, adhesives, and cement products. This limitation can be overcome, however, by the use of alternate analytical methods, such as Transmission Electron Microscopy (TEM).

This report cannot be represented by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. Test results pertain only to the samples submitted for analysis.

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NVLAP Accredited LAB #: 101631-0
Samples submitted by: PRE

Reports Reviewed By: *Approved Signatory*

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	Geoengineers 8410 154th Avenue NE Redmond, WA 98052	PACRIM # :	**14762.01**
		REPORT # :	2012-10-0128
		DATE RECEIVED :	10/04/2012-10/5/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 2213 8th Avenue	DATE ANALYZED :	10/15/2012-10/18/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/18/2012
SAMPLE DATE:	10/4/2012-10/5/2012	TURNAROUND:	3 Days
		PAGE :	2 of 14

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
1 2012-10-0128	**Unit 306, ceiling (Texture on plaster).** Light yellow-painted, light brown texture with white, plaster fragments. **Note:** Insufficient plaster to test.	**Chrysotile 1-3%**	Cellulose (15-20%), Perlite, Mineral Aggregate, Binder.	10/15/12
2 2012-10-0129	**Unit 306, west wall (Wallpaper on plaster).** White-painted, white vinyl-like wall covering (layer 1) with white to light yellow mastic (layer 2) and light grey plaster fragments. **Note:** Insufficient plaster to test.	**Layer 1** (Wall covering): None detected **Layer 2** (Mastic): None detected	**Layer 1:** Cellulose (<1%), Synthetics (10-15%), Binder, Paint. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/15/12
3 2012-10-0130	**Storage room, floor (12" tile and mastic).** Grey and white floor tile (layer 1) with yellow mastic (layer 2).	**Layer 1** (Tile): None detected **Layer 2** (Mastic): None detected	**Layer 1:** Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate, Paint, Wood.	10/15/12

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	Geoengineers 8410 154th Avenue NE Redmond, WA 98052	PACRIM # :	14762.01
		REPORT # :	2012-10-0128
		DATE RECEIVED :	10/04/2012-10/5/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 2213 8th Avenue	DATE ANALYZED :	10/15/2012-10/18/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/18/2012
SAMPLE DATE:	10/4/2012-10/5/2012	TURNAROUND:	3 Days
		PAGE :	3 of 14

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
4 2012-10-0131	**Storage room, wall-east (12" Tile on GWB).** White, chalky mud with white paper (layer 1) on white-painted, light pinkish-brown skim coat (layer 2) on light grey plaster (layer 3) on white chalky drywall with brown paper (layer 4).	**Layer 1** (Mud): None detected **Layer 2** (Skim coat): None detected **Layer 3** (Plaster): None detected **Layer 4** (Drywall): None detected	**Layer 1:** Cellulose (10-15%), Binder, Mineral Aggregate. **Layer 2:** Mineral Aggregate, Binder, Paint. **Layer 3:** Cellulose (<1%), Anhydrite-like Acicular Fibers (<1%), Mineral Aggregate, Binder. **Layer 4:** Cellulose (3-5%), Gypsum, Mineral Aggregate, Binder.	10/15/12
5 2012-10-0132	**Storage room, wall-east (GWB - Interior Wall).** Light brown, chalky drywall with brown and green paper.	None detected	Cellulose (5-7%), Gypsum, Mineral Aggregate, Binder.	10/16/12
6 2012-10-0133	**Storage room, ceiling (Texture on plaster).** White-painted, light brown texture material.	**Chrysotile 1-3%**	Cellulose (10-15%), Perlite, Mineral Aggregate, Binder, Paint.	10/16/12
7 2012-10-0134	**Closet, ceiling (Plaster on GWB).** Light pink skim coat (layer 1) on light grey plaster (layer 2) on white, chalky drywall with brown paper (layer 3).	**Layer 1** (Skim Coat): None detected **Layer 2** (Plaster): None detected **Layer 3** (Drywall): None detected	**Layer 1:** Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Anhydrite-like acicular fibers (1-3%), Mineral Aggregate, Binder. **Layer 3:** Cellulose (5-7%), Gypsum, Mineral Aggregate, Binder.	10/16/12

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	Geoengineers 8410 154th Avenue NE Redmond, WA 98052	PACRIM # :	14762.01
		REPORT # :	2012-10-0128
		DATE RECEIVED :	10/04/2012-10/5/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 2213 8th Avenue	DATE ANALYZED :	10/15/2012-10/18/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/18/2012
SAMPLE DATE:	10/4/2012-10/5/2012	TURNAROUND:	3 Days
		PAGE :	4 of 14

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
8 2012-10-0135	**Closet, east wall (Plaster on GWB).** Light pink skim coat (layer 1) on light grey plaster (layer 2) on white, chalky drywall with brown paper (layer 3).	**Layer 1** (Skim Coat): None detected **Layer 2** (Plaster): None detected **Layer 3** (Drywall): None detected	**Layer 1:** Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Anhydrite-like acicular fibers (1-3%), Mineral Aggregate, Binder. **Layer 3:** Cellulose (5-7%), Gypsum, Mineral Aggregate, Binder.	10/16/12
9 2012-10-0136	**Unit 309, ceiling (Texture on plaster).** Light yellow-painted, light brown texture.	**Chrysotile 1-3%**	Cellulose (10-15%), Perlite, Binder, Mineral Aggregate, Paint.	10/16/12
10 2012-10-0137	**Unit 309, west wall (Wallpaper on plaster).** White, chalky mud-like material (layer 1) and light grey, white-painted plaster (layer 2). **Note:** Light pinkish-brown texture residue associated with layer 1, but insufficient to test.	**Layer 1** (Mud): None detected **Layer 2** (Plaster): None detected	**Layer 1:** Binder, Mineral Aggregate. **Layer 2:** Cellulose (<1%), Mineral Aggregate, Binder Paint.	10/16/12
11 2012-10-0138	**Unit 208, ceiling (Texture on plaster).** Light yellow-painted, white, chalky texture (layer 1) on white-painted, light brown texture material.	**Layer 1** (Texture): None detected **Layer 2** (Texture): **Chrysotile 1-3%**	**Layer 1:** Cellulose (<1%), Binder, Mineral Aggregate, Paint. **Layer 2:** Cellulose (15-20%), Perlite, Mineral Aggregate, Binder, Paint.	10/16/12

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	Geoengineers 8410 154th Avenue NE Redmond, WA 98052	PACRIM # :	14762.01
		REPORT # :	2012-10-0128
		DATE RECEIVED :	10/04/2012-10/5/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 2213 8th Avenue	DATE ANALYZED :	10/15/2012-10/18/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/18/2012
SAMPLE DATE:	10/4/2012-10/5/2012	TURNAROUND:	3 Days
		PAGE :	5 of 14

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
12 2012-10-0139	**Unit 208, west wall (Wallpaper on plaster).** White-painted, light green texture (layer 1) with light grey plaster (layer 2).	**Layer 1** (Texture): None detected **Layer 2** (Plaster): None detected	**Layer 1:** Anhydrite-like acicular fibers (1-3%), Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Mineral Aggregate, Binder.	10/16/12
13 2012-10-0140	**Unit 218, ceiling (Texture on plaster).** Light yellow painted, light brown texture material.	**Chrysotile 1-3%**	Cellulose (15-20%), Perlite, Mineral Aggregate, Binder, Paint.	10/17/12
14 2012-10-0141	**Unit 218, north wall (Wallpaper on plaster).** Light yellow-white, white, chalky mud (layer 1) on light brown and white wall covering (layer 2) with light brown mastic (layer 3) and white-painted, green skim coat (layer 4) with light grey plaster (layer 5).	**Layer 1** (Mud): None detected **Layer 2** (Wall covering): None detected **Layer 3** (Mastic): None detected **Layer 4** (Skim Coat): None detected **Layer 5** (Plaster): None detected	**Layer 1:** Cellulose (<1%). Binder, Mineral Aggregate, Paint. **Layer 2:** Cellulose (<1%), Synthetics (7-10%), Vinyl, Mineral Aggregate. **Layer 3:** Cellulose (<1%), Adhesive, Mineral Aggregate. **Layer 4:** Mineral Aggregate, Binder, Paint. **Layer 5:** Cellulose (<1%), Mineral Aggregate, Binder.	10/17/12
15 2012-10-0142	**Unit 220, ceiling (Texture on plaster).** White and light yellow-painted, light brown texture.	**Chrysotile 1-3%**	Cellulose (15-20%), Perlite, Mineral Aggregate, Binder, Paint.	10/17/12

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	Geoengineers 8410 154th Avenue NE Redmond, WA 98052	PACRIM # :	14762.01
		REPORT # :	2012-10-0128
		DATE RECEIVED :	10/04/2012-10/5/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 2213 8th Avenue	DATE ANALYZED :	10/15/2012-10/18/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/18/2012
SAMPLE DATE:	10/4/2012-10/5/2012	TURNAROUND:	3 Days
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Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
16 2012-10-0143	**Unit 220, north wall (Wallpaper on plaster).** Light yellow-painted, white wall covering with white mastic (layer 1) and light brown-painted, green skin coat (layer 2) with light grey plaster (layer 3). **Note:** Mastic and wall covering were inseparable.	**Layer 1** (Wall covering): None detected **Layer 2** (Skim Coat): None detected **Layer 3** (Plaster): None detected	**Layer 1:** Cellulose (<1%), Synthetics (10-15%), Vinyl, Paint, Adhesive, Mineral Aggregate. **Layer 2:** Mineral Aggregate, binder, Paint. **Layer 3:** Cellulose (<1%), Mineral Aggregate, Binder.	10/17/12
17 2012-10-0144	**Unit 228, ceiling (Texture on plaster).** Light yellow-painted, light brown texture.	**Chrysotile 1-3%**	Cellulose (15-20%), Perlite, Binder, Mineral Aggregate, Paint.	10/17/12
18 2012-10-0145	**Unit 228, south wall (Wallpaper on plaster).** White-painted, white wall covering (layer 1) with white mastic (layer 2) and white, chalky mud (layer 3).	**Layer 1** (Wall covering): None detected **Layer 2** (Mastic): None detected **Layer 3** (Mud): None detected	**Layer 1:** Cellulose (1-3%), Synthetics (10-15%), Vinyl, Mineral Aggregate, Paint. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate. **Layer 3:** Cellulose (<1%), Binder, Mineral Aggregate.	10/17/12
19 2012-10-0146	**Unit 221, ceiling (Texture on plaster).** light yellow-painted, light brown texture.	**Chrysotile 1-3%**	Cellulose (15-20%), Perlite, Mineral Aggregate, Binder, Paint.	10/17/12

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SAMPLE DATE:	10/4/2012-10/5/2012	TURNAROUND:	3 Days
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Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
20 2012-10-0147	**Unit 221, south wall (Wallpaper on plaster).** Light yellowish-white-painted wall covering (layer 1) with white mastic (layer 2) and light grey plaster fragments with green skim coat fragments (layer 3).	**Layer 1** (Wall covering): None detected **Layer 2** (Mastic): None detected **Layer 3** (Plaster): None detected	**Layer 1:** Cellulose (<1%), Synthetics (10-15%), Vinyl, Mineral Aggregate, Paint. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate. **Layer 3:** Cellulose (<1%), Mineral Aggregate, Binder, Paint.	10/17/12
21 2012-10-0148	**Stairwell, south end, west wall (Plaster).** White-painted, light pinkish-brown skim coat (layer 1) on light grey plaster (layer 2).	**Layer 1** (Skim coat): None detected **Layer 2** (Plaster): None detected	**Layer 1:** Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Mineral Aggregate, Binder.	10/17/12
22 2012-10-0149	**Stairwell, south end, floor (9" red tile and mastic).** Red floor tile (layer 1) with black tar mastic (layer 2) on light brown, somewhat chalky leveling compound (layer 3).	**Layer 1** (Tile): **Chrysotile 7-10%** **Layer 2** (Mastic): None detected **Layer 3** (Leveling compound): None detected	**Layer 1:** Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Tar, Mineral Aggregate. **Layer 3:** Cellulose (<1%), Mineral Aggregate, Binder.	10/17/12
23 2012-10-0150	**Workout room floor, first floor (9" red tile and mastic).** Yellow mastic (layer 1) on red floor tile (layer 2) with black tar mastic (layer 3).	**Layer 1** (Mastic): None detected **Layer 2** (Tile): **Chrysotile 10-15%** **Layer 3** (Mastic): None detected	**Layer 1:** Cellulose (<1%), Synthetics (<1%), Adhesive, Mineral Aggregate. **Layer 2:** Mineral Aggregate, Binder. **Layer 3:** Cellulose (<1%), Tar, Mineral Aggregate.	10/17/12

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	2213 8th Avenue	**REPORT BY :**	Sarah Kreiner
		REPORT DATE :	10/18/2012
SAMPLE DATE:	10/4/2012-10/5/2012	**TURNAROUND:**	3 Days
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Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
24 2012-10-0151	**Workout room, ceiling (Texture on plaster).** White-painted, light brown texture material.	**Chrysotile 1-3 %**	Cellulose (15-20%), Perlite, Binder, Mineral Aggregate, Vermiculite, Paint.	10/17/12
25 2012-10-0152	**Workout room, west wall (Plaster).** White-painted, light pink skim coat (layer 1) on light grey plaster (layer 2).	**Layer 1** (Skim coat): None detected **Layer 2** (Plaster): None detected	**Layer 1:** Cellulose (<1%), Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Mineral Aggregate, Binder.	10/17/12
26 2012-10-0153	**Workout room, south wall (GWB).** White, chalky drywall with light brown-painted, brown paper.	None detected	Cellulose (10-15%), Gypsum, Mineral Aggregate, Binder, Paint.	10/17/12
27 2012-10-0154	**Workout room, south wall interior on beam (Plaster).** Light brown to off-white-painted, light pink skim coat (layer 1) on light grey plaster (layer 2).	**Layer 1** (Skim coat): None detected **Layer 2** (Plaster): None detected	**Layer 1:** Cellulose (<1%), Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Vermiculite, Mineral Aggregate, Binder, Paint.	10/17/12

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Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
28 2012-10-0155	**Men's bathroom, ceiling (Texture on plaster).** White-painted, light brown texture with light grey plaster fragments. **Note:** Insufficient plaster to test.	**Chrysotile 1-3%**	Cellulose (10-15%), Perlite, Mineral Aggregate, Vermiculite, Binder, Paint.	10/17/12
29 2012-10-0156	**Men's bathroom, east wall (Plaster).** White-painted, light brown texture (layer 1) and white-painted, light grey plaster (layer 2).	**Layer 1** (Texture): **Chrysotile 1-3%** **Layer 2** (Plaster): None detected	**Layer 1:** Cellulose (15-20%), Perlite, Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Perlite, Mineral Aggregate, Binder, Paint.	10/17/12
30 2012-10-0157	**Men's bathroom, floor (Green flooring and mastic).** Green and grey floor tile (layer 1) with clear, tacky mastic (layer 2) on white floor tile (layer 3) with clear tacky mastic (layer 4) on red floor tile (layer 5).	**Layer 1** (Tile): None detected **Layer 2** (Mastic): None detected **Layer 3** (Tile): None detected **Layer 4** (Mastic): None detected **Layer 5** (Tile): **Chrysotile 10-15%**	**Layer 1:** Mineral Aggregate, binder, Vinyl. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate. **Layer 3:** Mineral Aggregate, Binder. **Layer 4:** Cellulose (<1%), Adhesive, Mineral Aggregate. **Layer 5:** Mineral Aggregate, Binder.	10/17/12

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Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
31 2012-10-0158	**Men's bathroom, floor (9" red tile and mastic).** Red tile (layer 1) with black tar mastic (layer 2).	**Layer 1** (Tile): **Chrysotile 10-15%** **Layer 2** (Mastic): None detected	**Layer 1:** Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Tar, Mineral Aggregate.	10/17/12
32 2012-10-0159	**Laundry, ceiling (Texture on plaster).** White-painted, light brown texture (layer 1) with light grey, powdered plaster (layer 2).	**Layer 1** (Texture): **Chrysotile 1-3%** **Layer 2** (Plaster): None detected	**Layer 1:** Cellulose (15-20%), Perlite, Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Vermiculite, Binder.	10/17/12
33 2012-10-0160	**Laundry, west wall (Skim coat on plaster).** White-painted, light pink skim coat (layer 1) on light grey plaster (layer 2).	**Layer 1** (Skim coat): None detected **Layer 2** (Plaster): None detected	**Layer 1:** Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Mineral Aggregate, Binder.	10/17/12
34 2012-10-0161	**West side stairwell, ceiling (Texture on plaster).** White-painted, light brown texture (layer 1) on light grey plaster (layer 2).	**Layer 1** (Texture): **Chrysotile 1-3%** **Layer 2** (Plaster): None detected	**Layer 1:** Cellulose (7-10%), Perlite, Mineral Aggregate, Binder, Paint. **Layer 2:** Mineral Aggregate, Binder.	10/17/12

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Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
35 2012-10-0162	**West side stairwell, north wall (Plaster).** Light yellow-painted, light pink skim coat (layer 1) on light grey plaster (layer 2).	**Layer 1** (Skim coat): None detected **Layer 2** (Plaster): None detected	**Layer 1:** Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Mineral Aggregate, Binder.	10/17/12
36 2012-10-0163	**West side stairwell, floor (9" red tile and mastic).** Clear to light yellow tacky, mastic (layer 1) on red floor tile (layer 2) with black tar mastic (layer 3).	**Layer 1** (Mastic): None detected **Layer 2** (Tile): **Chrysotile 7-10%** **Layer 3** (Mastic): None detected	**Layer 1:** Cellulose (<1%), Synthetics (<1%), Adhesive, Mineral Aggregate. **Layer 2:** Mineral Aggregate, Binder. **Layer 3:** Cellulose (<1%), Tar, Mineral Aggregate.	10/17/12
37 2012-10-0164	**Front reception area, south wall (GWB).** Light yellow-painted, white, chalky mud with white paper (layer 1) on white, chalky drywall with white-painted, brown paper (layer 2).	**Layer 1** (Mud): None detected **Layer 2** (Drywall): None detected	**Layer 1:** Cellulose (25-30%), Binder, Adhesive, Mineral Aggregate, Paint. **Layer 2:** Cellulose (7-10%), Fiberglass (<1%), Gypsum, Mineral Aggregate, Mica, Binder.	10/17/12
38 2012-10-0165	**Kitchen, ceiling (Texture on plaster).** White-painted, light brown texture (layer 1) with light grey powdered plaster (layer 2).	**Layer 1** (Texture): **Chrysotile 1-3%** **Layer 2** (Plaster): None detected	**Layer 1:** Cellulose (10-15%), Perlite, Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Mineral Aggregate, Binder.	10/17/12

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Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
39 2012-10-0166	**Kitchen, south wall (Plaster).** Light yellow-painted, white, chalky mud (layer 1) on brown-painted, white wall covering material (layer 2).	**Layer 1** (Mud): None detected **Layer 2** (Wall covering): None detected	**Layer 1:** Cellulose (<1%), Binder, Mineral Aggregate, Paint. **Layer 2:** Cellulose (<1%), Synthetics (10-15%), Vinyl, Binder, Paint.	10/17/12
40 2012-10-0167	**North hallway, first floor, ceiling (Texture on plaster).** White-painted, light brown texture (layer 1) with light grey powdered plaster (layer 2).	**Layer 1** (Texture): **Chrysotile 1-3%** **Layer 2** (Plaster): None detected	**Layer 1:** Cellulose (15-20%), Perlite, Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Mineral Aggregate, Binder.	10/17/12
41 2012-10-0168	**Walkway roof overhang, west side (Silver coat and tar).** Silver coat (layer 1) on black, tar-like material (layer 2).	Layer 1 (Silver coat): **Chrysotile 1-3%** **Layer 2** (Tar-like material): None detected	**Layer 1:** Cellulose (<1%), Binder, Mineral Aggregate. **Layer 2:** Cellulose (<1%), Binder, Tar, Mineral Aggregate, Pollen.	10/17/12
42 2012-10-0169	**Laundry storage room (Plaster on building column).** White-painted, light pink skim coat (layer 1) on light grey plaster (layer 2).	**Layer 1** (Skim coat): None detected **Layer 2** (Plaster): None detected	**Layer 1:** Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Vermiculite, Mineral Aggregate, Binder.	10/18/12

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PROJECT:	Block 21 2213 8th Avenue	**DATE ANALYZED :** **REPORT BY :** **REPORT DATE :**	10/15/2012-10/18/2012 Sarah Kreiner 10/18/2012
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Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
43 2012-10-0170	**Roof at access hatch (Rolled roofing and tar sealant and paper).** Black tar-like roofing with white gravel (layer 1) on black tar and white gravel (layer 2) and brown tar paper (layer 3).	**Layer 1** (Roofing): None detected **Layer 2** (Tar): None detected **Layer 3** (Tar paper): None detected	**Layer 1:** Cellulose (<1%), Synthetics (10-15%), Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Tar, Mineral Aggregate. **Layer 3:** Cellulose (30-35%), Tar, Mineral Aggregate.	10/18/12
44 2012-10-0171	**East wall exterior, windows (Window putty).** White-painted, white, brittle window putty with grey surface residue.	**Chrysotile 3-5%**	Cellulose (<1%), Binder, Mineral Aggregate, Paint, Soot.	10/18/12
45 2012-10-0172	**North exterior of building, wall (Coating on wall).** White-painted, black tar (layer 1) on red-painted, light grey, plaster-like material (layer 2).	**Layer 1** (Tar): **Chrysotile 1-3%** **Layer 2** (Plaster): None detected	**Layer 1:** Cellulose (<1%), Tar, Mineral Aggregate, Paint. **Layer 2:** Mineral Aggregate, Binder, Paint.	10/18/12
46 2012-10-0173	**West wall exterior, windows (Window putty).** White-painted, white, brittle window putty, on red paint.	**Chrysotile 3-5%**	Cellulose (<1%), Binder, Mineral Aggregate, Paint.	10/18/12

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Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
47 2012-10-0174	**West wall exterior (Coating on wall).** White-painted, white chalky mud-like material (layer 1) on white-painted, black tar (layer 2) on pink-painted, light grey plaster-like material (layer 3).	**Layer 1** (Mud): None detected **Layer 2** (Tar): **Chrysotile 3-5%** **Layer 3** (Plaster-like material): None detected	**Layer 1:** Cellulose (<1%), Binder, Mineral Aggregate, Paint. **Layer 2:** Cellulose (<1%), Tar, Mineral Aggregate. **Layer 3:** Mineral Aggregate, Binder.	10/18/12

Appendix C: **Sample Location Drawings and Photos**

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Floor 1



Positive samples circled in red on drawing and bold in table below.

Sample #	Sample Location	Sample Description
21	Stairwell, south end, west wall	Plaster
22	**Stairwell, south end, floor**	**9" red tile and mastic**
23	**Workout room floor, first floor**	**9" red tile and mastic**
24	**Workout room, ceiling**	**Texture on plaster**
25	Workout room, west wall	Plaster
26	Workout room, south wall	GWB
27	Workout room, south wall interior on beam	Plaster
28	**Men's/Women's bathroom, ceiling**	**Texture on plaster**
29	**Men's/Women's bathroom, east wall**	**Plaster**
30	**Men's/Women's bathroom, floor**	**Green SVF and mastic**
31	**Men's/Women's bathroom, floor**	**9" red tile and mastic**
32	**Laundry, ceiling**	**Texture on plaster**
33	Laundry, west wall	Skim coat on plaster
34	**West side stairwell, ceiling**	**Texture on plaster**
35	West side stairwell, north wall	Plaster
36	**West side stairwell, floor**	**9" red tile and mastic**
37	Front reception area, south wall	GWB
38	**Kitchen, ceiling**	**Texture on plaster**
39	Kitchen, south wall	Plaster
40	**North hallway, first floor, ceiling**	**Texture on plaster**
42	Laundry storage room	Plaster on building column
44	**East wall exterior, windows**	**Window putty**
45	**North exterior of building, wall**	**Coating on wall**

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Project #: 14762.01
Drawing #: 01 of 03
Sampling Date: 10/05/12
Drawing By: Robin Sandstrom
Drawing Not To Scale

Sample #	Sample Location	Sample Description
46	West wall exterior, windows	Window putty
47	West wall exterior	Coating on wall

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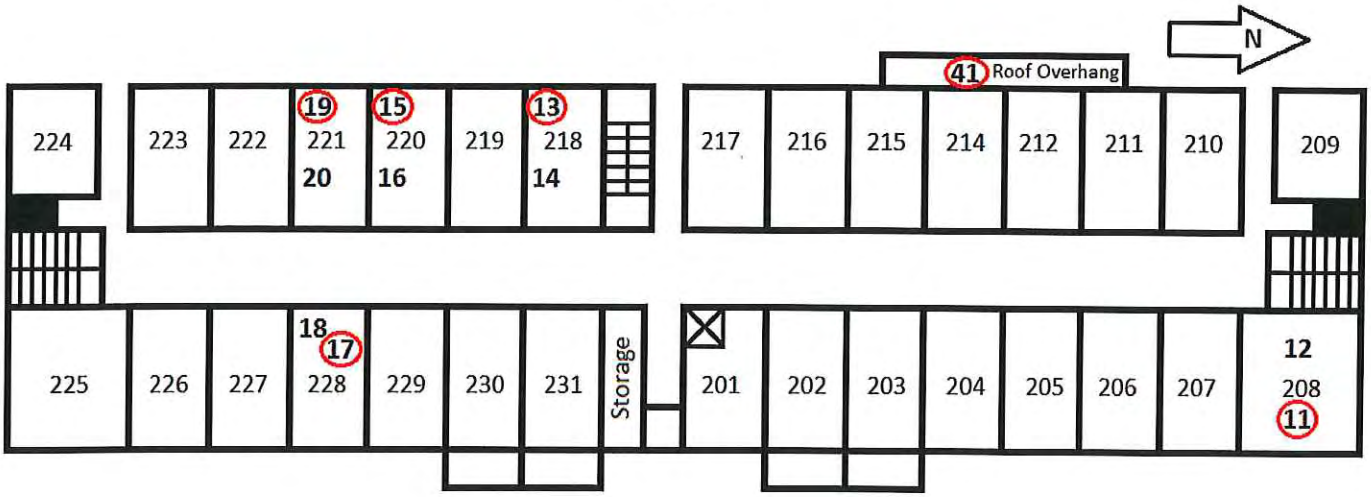
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Drawing #: 01 of 03
Sampling Date: 10/05/12
Drawing By: Robin Sandstrom
Drawing Not To Scale

Floor 2



Positive samples circled in red on drawing and bold in table below.

Sample #	Sample Location	Sample Description
11	**Unit 208, ceiling**	**Texture on plaster**
12	Unit 208, west wall	Wallpaper on plaster
13	**Unit 218, ceiling**	**Texture on plaster**
14	Unit 218, north wall	Wallpaper on plaster
15	**Unit 220, ceiling**	**Texture on plaster**
16	Unit 220, north wall	Wallpaper on plaster
17	**Unit 228, ceiling**	**Texture on plaster**
18	Unit 228, south wall	Wallpaper on plaster
19	**Unit 221, ceiling**	**Texture on plaster**
20	Unit 221, south wall	Wallpaper on plaster
41	**Walkway roof overhang, west side**	**Silver coat and tar**

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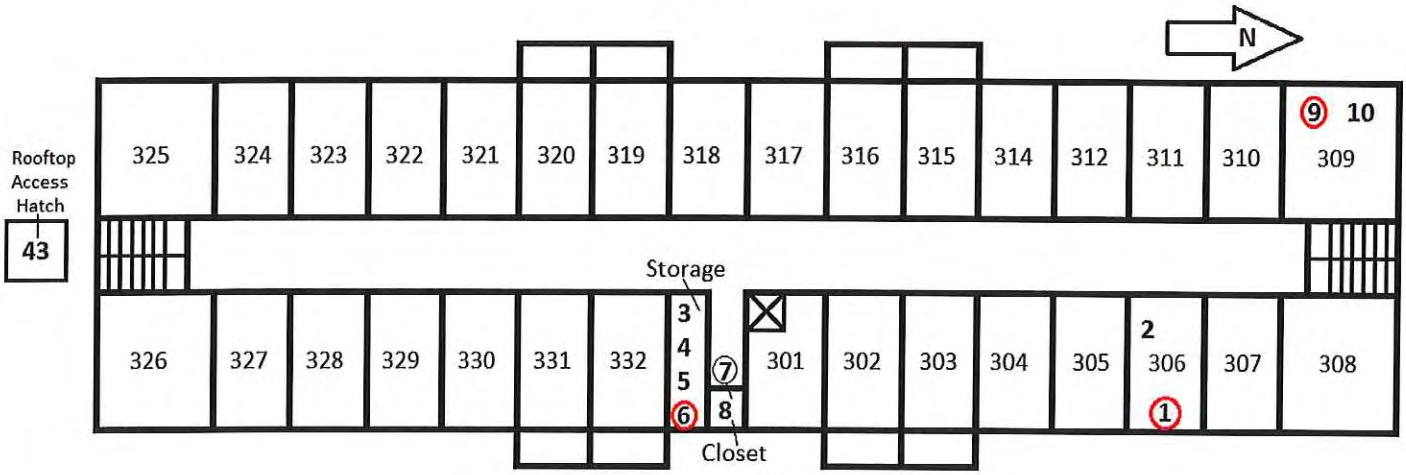
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Drawing #: 02 of 03
Sampling Date: 10/05/12
Drawing By: Robin Sandstrom
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Floor 3



Positive samples circled in red on drawing and bold in table below.

Sample #	Sample Location	Sample Description
01	**Unit 306, ceiling**	**Texture on plaster**
02	Unit 306, west wall	Wallpaper on plaster
03	Storage room, floor	12" tile and mastic
04	Storage room, east wall	Plaster on GWB
05	Storage room, east wall	GWB (wall interior)
06	**Storage room, ceiling**	**Texture on plaster**
07	Closet, ceiling	Plaster on GWB
08	Closet, east wall	Plaster on GWB
09	**Unit 309, ceiling**	**Texture on plaster**
10	Unit 309, west wall	Wallpaper on plaster
43	Roof at access hatch	Rolled roofing and tar sealant and paper

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Drawing #: 03 of 03
Sampling Date: 10/05/12
Drawing By: Robin Sandstrom
Drawing Not To Scale



Photo 1: Unit 306 ceiling, texture on plaster (Sample # 01).



Photo 2: Storage room ceiling, texture on plaster (Sample # 06).

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Photo 3: Unit 309 ceiling, texture on plaster (Sample # 09).



Photo 4: Unit 208 ceiling, texture on plaster (Sample # 11)

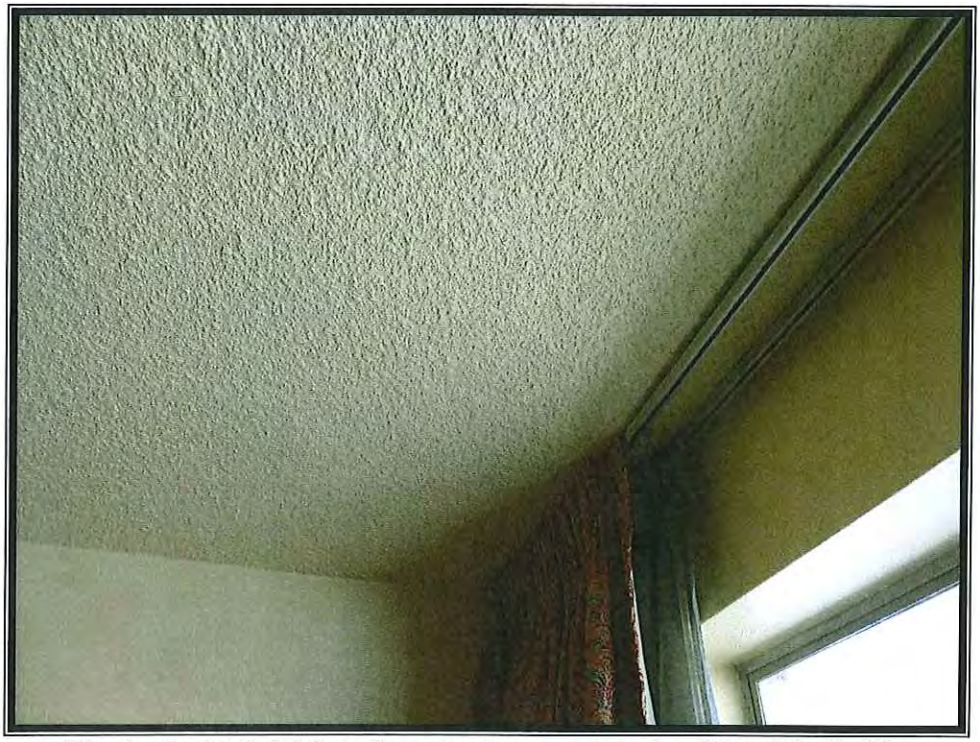


Photo 5: Unit 218 ceiling, texture on plaster (Sample # 13).



Photo 6: Unit 220 ceiling, texture on plaster (Sample # 15).



Photo 7: Unit 228 ceiling, texture on plaster (Sample # 17)



Photo 8: Unit 221 ceiling, texture on plaster (Sample # 19)

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Photo 9: Stairwell, south end floor, 9" red tile and mastic (Sample # 22)



Photo 10: Workout room floor, first floor, 9" red tile and mastic (Sample # 23)

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Photo 11: Workout room ceiling, texture on plaster (Sample # 24)



Photo 12: Men's bathroom ceiling, texture on plaster (Sample # 28)



Photo 13: Men's bathroom east wall, plaster (Sample # 29)



Photo 14: Men's bathroom floor, green SVF and mastic (Sample # 30)



Photo 15: Men's bathroom floor, 9' red tile and mastic (Sample # 31)



Photo 16: Laundry ceiling, texture on plaster (Sample # 32)

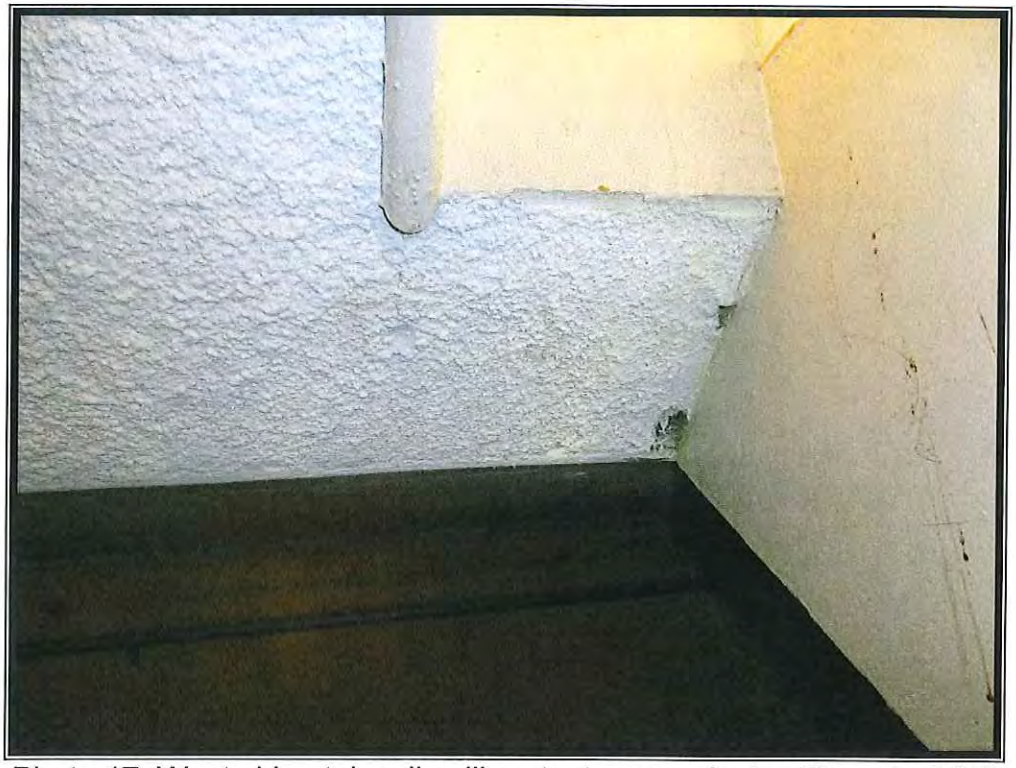


Photo 17: West side stairwell ceiling, texture on plaster (Sample # 34)



Photo 18: West side stairwell floor, 9" red tile and mastic (Sample # 36)

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Photo 19: Kitchen ceiling, texture on plaster (Sample # 38)

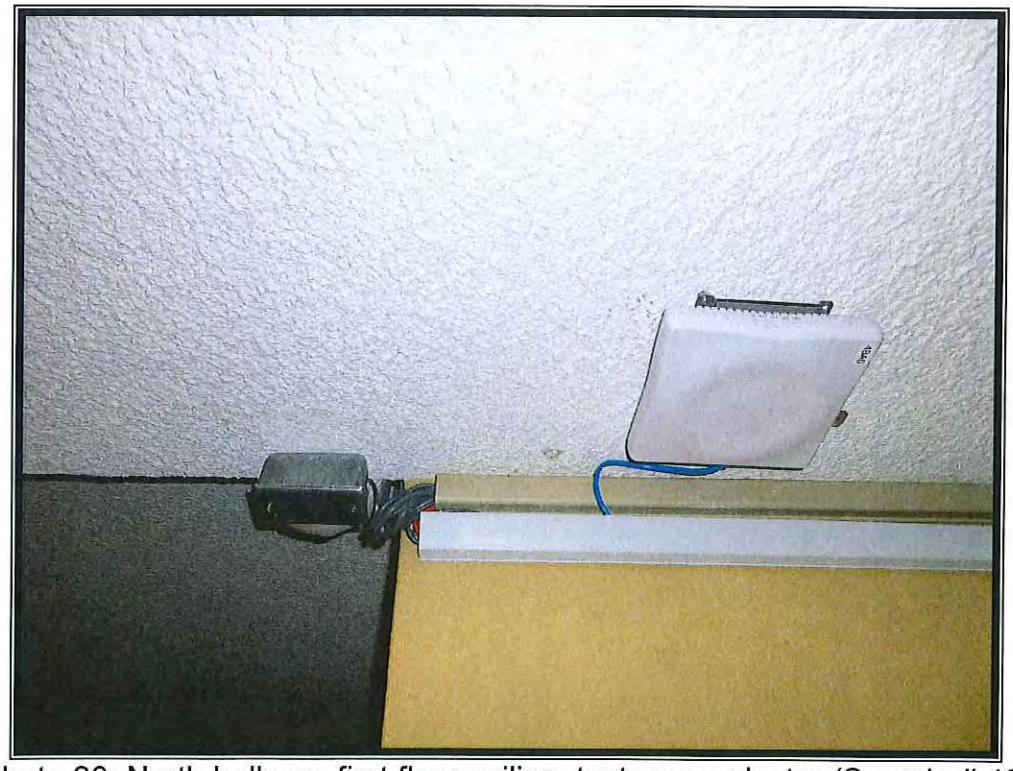


Photo 20: North hallway, first floor ceiling, texture on plaster (Sample # 40)



Photo 21: Rolled roofing (Sample # 43)



Photo 22: East wall exterior windows, window putty (Sample # 44)

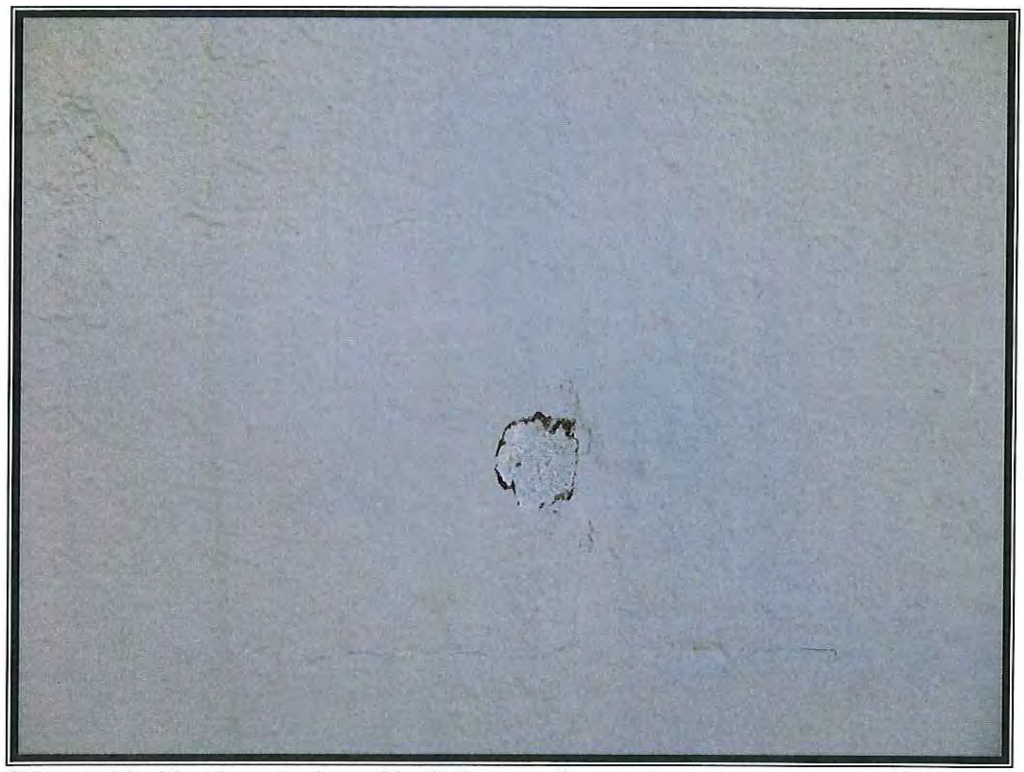


Photo 23: North exterior of building wall, coating on wall (Sample # 45)



Photo 24: West wall exterior windows, window putty (Sample # 46)

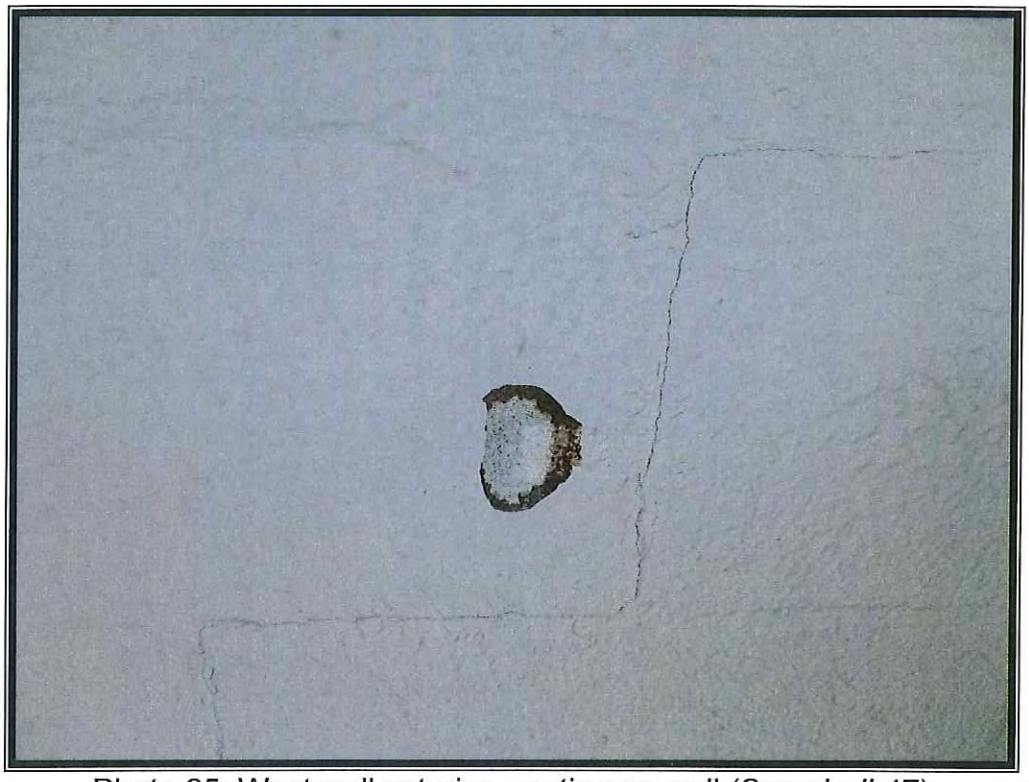


Photo 25: West wall exterior, coating on wall (Sample # 47)

Appendix D: **XRF Data Sheets**

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Client:	**GeoEngineers, Inc** 600 Stewart St., Ste. 1700 Seattle, WA 98101	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP300-80662** **4-Oct-2012** **Todd Carter**
Project:	**Cornish College Dorm** 2213 8th Avenue Seattle, WA 98121	*PRE Job#:*	**14762.01**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
1	485	*First calibration check*				Positive	1.2
2	486	*First calibration check*				Negative	0.9
3	487	*First calibration check*				Positive	1.1
4	488	Wood	Door jamb	Third floor, north stairwell	White	Negative	0.06
5	489	Wood	Door interior	Third floor, north stairwell	White	Negative	0.15
6	490	Wood	Door exterior	Third floor, room 307	White	Negative	0
7	491	Drywall	Wall	Third floor, north hallway	White	Negative	0
8	492	Metal	Baseboard heater	Third floor, north hallway	White	Negative	0.02
9	493	Metal	Fire hose cabinet	Third floor, north hallway	Red	Negative	0.27
10	494	Wood	Door trim	Third floor, south hallway	White	Negative	0.13
12	495	Drywall	Wall D	Unit 306	Yellow	Negative	0
13	496	Drywall	Wall B	Unit 306	Yellow	Negative	0
14	497	Wood	Door jamb	Unit 306, bathroom	White	Negative	0.18
15	498	Wood	Door trim	Unit 306, bathroom	White	Negative	0.24
16	499	Drywall	Shower ceiling	Unit 306, bathroom	Ivory	Negative	0.6
17	500	Drywall	Wall C	Unit 306	Yellow	Negative	0
18	501	Concrete	Wall	North stairwell	White	Negative	0
19	502	Metal	Handrail	North stairwell	Tan	Negative	0.5
20	503	Drywall	Wall B	Unit 309	Yellow	Negative	0
21	504	Drywall	Window sill	Unit 309	Yellow	Negative	0.01
22	505	Wood	Door jamb	Unit 309, bathroom	White	Negative	0.3
23	506	Concrete	Exterior window sill	Unit 309, north window	White	Positive	1.3

Client:	**GeoEngineers, Inc** 600 Stewart St., Ste. 1700 Seattle, WA 98101	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP300-80662** **4-Oct-2012** **Todd Carter**
Project:	**Cornish College Dorm** 2213 8th Avenue Seattle, WA 98121	*PRE Job#:*	**14762.01**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
24	507	Drywall	Wall	Third floor, utility closet	White	Negative	0.01
25	508	Concrete	Wall	First floor, north stairwell	White	Negative	0
26	509	Drywall	Wall A	First floor	Yellow	Negative	0
27	510	Concrete	Wall	Laundry room	White	Negative	0.01
28	511	Concrete	Floor	Laundry room	Gray	Negative	0.04
29	512	Wood	Wall	Work out room	Tan	Negative	0
30	513	Concrete	Exterior wall	Front of building	White	Positive	1.1
31	514	Concrete	Exterior window sill	Front of building	White	Positive	1.3
32	515	Concrete	Exterior wall	North end of building	White	Negative	0
33	516	Concrete	Exterior wall	Back of building	White	Negative	0.9
34	517	*Last calibration check*				Positive	1.2
35	518	*Last calibration check*				Negative	0.9
36	519	*Last calibration check*				Negative	0.9

Report by: Robin Sandstrom
Date: 10/10/12

Appendix E: **XRF Performance Characteristic Sheet**

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Performance Characteristic Sheet

EFFECTIVE DATE: **September 24, 2004** **EDITION NO.: 1**

MANUFACTURER AND MODEL:

Make: *Niton LLC*
Tested Model: *XLp 300*
Source: ^{109}Cd
Note: This PCS is also applicable to the equivalent model variations indicated below, for the Lead-in-Paint K+L variable reading time mode, in the XLi and XLp series:

XLi 300A, XLi 301A, XLi 302A and XLi 303A.
XLp 300A, XLp 301A, XLp 302A and XLp 303A.
XLi 700A, XLi 701A, XLi 702A and XLi 703A.
XLp 700A, XLp 701A, XLp 702A, and XLp 703A.

Note: The XLi and XLp versions refer to the shape of the handle part of the instrument. The differences in the model numbers reflect other modes available, in addition to Lead-in-Paint modes. The manufacturer states that specifications for these instruments are identical for the source, detector, and detector electronics relative to the Lead-in-Paint mode.

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Lead-in-Paint K+L variable reading time mode.

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm^2 (inclusive)

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm^2 in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm^2 film).

If readings are outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instruments into control before XRF testing proceeds.

SUBSTRATE CORRECTION:

For XRF results using Lead-in-Paint K+L variable reading time mode, substrate correction is <u>not</u> needed for:

Brick, Concrete, Drywall, Metal, Plaster, and Wood

INCONCLUSIVE RANGE OR THRESHOLD:

K+L MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm^2)
Results not corrected for substrate bias on any substrate	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	1.0
	Plaster	1.0
	Wood	1.0

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated from the EPA/HUD evaluation using archived building components. Testing was conducted in August 2004 on 133 testing combinations. The instruments that were used to perform the testing had new sources; one instrument's was installed in November 2003 with 40 mCi initial strength, and the other's was installed June 2004 with 40 mCi initial strength.

OPERATING PARAMETERS:

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Substrate correction is not needed for brick, concrete, drywall, metal, plaster or wood when using Lead-in-Paint K+L variable reading time mode, the normal operating mode for these instruments. If substrate correction is desired, refer to Chapter 7 of the HUD Guidelines for guidance on correcting XRF results for substrate bias.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing. Use the K+L variable time mode readings.

Conduct XRF retesting at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below.

Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family housing a result is defined as the average of three readings. In multifamily housing, a result is a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF results.

Compute the average of all ten re-test XRF results.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

For the Lead-in-Paint K+L variable reading time mode, the instrument continues to read until it is moved away from the testing surface, terminated by the user, or the instrument software indicates the reading is complete. The following table provides testing time information for this testing mode. The times have been adjusted for source decay, normalized to the initial source strengths as noted above. Source strength and type of substrate will affect actual testing times. At the time of testing, the instruments had source strengths of 26.6 and 36.6 mCi.

Testing Times Using K+L Reading Mode (Seconds)						
	All Data			Median for laboratory-measured lead levels (mg/cm^2)		
Substrate	25^{th} Percentile	Median	75^{th} Percentile	Pb < 0.25	0.25 ≤ Pb<1.0	1.0 ≤ Pb
Wood Drywall	4	11	19	11	15	11
Metal	4	12	18	9	12	14
Brick Concrete Plaster	8	16	22	15	18	16

CLASSIFICATION RESULTS:

XRF results are classified as positive if they are greater than or equal to the threshold, and negative if they are less than the threshold.

DOCUMENTATION:

A document titled *Methodology for XRF Performance Characteristic Sheets* provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. For a copy of this document call the National Lead Information Center Clearinghouse at 1-800-424-LEAD.

This XRF Performance Characteristic Sheet was developed by the Midwest Research Institute (MRI) and QuanTech, Inc., under a contract between MRI and the XRF manufacturer. HUD has determined that the information provided here is acceptable when used as guidance in conjunction with Chapter 7, Lead-Based Paint Inspection, of HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*.

Appendix F: **Universal Waste Rule WAC 173-303-573**

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

Focus

Universal Waste Rule for Dangerous Waste Lamps WAC 173-303-573

Background

The Universal Waste Rule (UWR) establishes alternative, streamlined waste management standards in place of most of the Dangerous Waste Regulations, Chapter 173-303 WAC, except for, WAC 173-303-050, 173-303-145 and 173-303-960. Universal wastes are certain dangerous wastes that are frequently generated, and that are able to be managed appropriately under less stringent regulatory requirements. The Universal Waste Rule for batteries and mercury-containing thermostats has been in place in Washington State since 1998. For more information on the original UWR, refer to Ecology publication number 98-407 (Revised).

In June 2000, Ecology added lamps that are dangerous waste to the UWR. This rule replaces the "Interim Policy on Waste Management of Spent Fluorescent Light Tubes," dated January 30, 1995.

Universal Waste Categories of Lamps

The types of lamps that may be universal waste include:

- Fluorescent tubes
- High density (HID) lamps (mercury vapor, metal halide, high pressure sodium)
- Compact fluorescent
- Neon lamps[1]
- Any other lamps that are dangerous waste

[1] *"Neon" lamp manufacturers do not always use the inert gas neon, some are manufactured using mercury and phosphor powder.*

June 2000

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Why Do We Care About Lamps?

Nationally, about 600 million lamps are disposed of annually, most to solid waste disposal facilities, including landfills and solid waste incinerators. In fluorescent lamps, mercury is the main concern and is present in lamps primarily in vapor form.

- The average mercury content in a fluorescent tube manufactured in 1999 is approximately 12 milligrams.
- Pre-1999 manufactured fluorescent tubes can have from 15 to 50 milligrams.
- High intensity discharge lamps may contain up to 250 milligrams, depending on the lamp wattage.

During solid waste handling and disposal many lamps break releasing mercury vapor and potentially exposing solid waste handlers to inhalation of those vapors. Solid waste incineration of mercury containing lamps also releases the mercury into the atmosphere. Mercury in the atmosphere is eventually deposited back to the earth.



Health & Environmental Hazards of Mercury

- Health risk from inhalation or absorption
- Causes neurological disorders
- Persistent, bioaccumulative and toxic
- Major cause of contaminated fish advisories

Some lamps may also contain lead in the glass and lead solder used in the lamp base. Lead is a toxic metal that may leach from solid waste landfills into the ground water. Manufacturers are eliminating the lead by using nonleaded glass and solders in newer lamps.

How to Know if a Lamp is Dangerous Waste

Lamps are known to designate as dangerous waste because of their mercury and/or lead content. Lamps may be assumed to be dangerous waste, they may be "book designated" using manufacturers' information, or they may be designated through sampling and testing.

Certain "green" lamps are available that contain less mercury and do not designate as dangerous waste. Ask your lamp manufacturer for data sheets to use when making waste determinations for these lamps. Check with your local health department, solid waste agency, or landfill for recycling or disposal options.

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Should Fluorescent Lamps Still be Used?

YES! Fluorescent tubes use one-quarter of the energy used by incandescent lamps for the same amount of light and last as much as ten times longer than incandescent bulbs. Compact fluorescent lamps last far longer than conventional tubes. The lamps used for lighting streets, playfields, and parking lots should also be selected for energy conservation. Energy conservation reduces mercury emissions from fossil fuel burning power plants. Using less electricity – which we can do by using energy-saving lighting – is the best protection for health and the environment.

Who is Affected by the UWR for Lamps?

- Regulated generators of dangerous waste (Medium Quantity and Large Quantity Generators)
- Businesses that generate or accumulate dangerous waste lamps in regulatedquantities (this category may include commercial building/property owners that maintain the lighting for tenants)
- Businesses that provide collection and management services (e.g., lighting contractors)

Regulated generators of dangerous waste generate over 220 pounds of total dangerous waste per month or batch (or 2.2 pounds of extremely hazardous waste), or accumulate greater than 2,200 pound of dangerous waste (or 2.2 pounds of extremely hazardous waste) at any time. As a point of reference, four (4), four-foot long, linear fluorescent tubes equal approximately 2.2 pounds. It would take about 400 of those tubes to equal 220 pounds and approximately 4,000 of those tubes to equal 2,200 pounds.

NOTE: Small Quantity Generators (SQGs) are exempt from the UWR (they are subject to WAC 173-303-070(8)) and can manage dangerous waste lamps as SQG dangerous waste. Households are also exempt from the rule. Local governments and/or landfills, however, may restrict disposal by SQGs and households. (If a SQG generates dangerous waste lamps in quantities that would put them into a higher generator category, they should choose to manage those lamps as universal waste to retain their SQG status.

Under the UWR, there are small quantity handlers, large quantity handlers, transporters and destination facilities.

- Handlers are the generators of the universal waste or businesses that receive and collect universal waste before shipping to another handler or to a destination facility.
- Transporters transport the lamps between handlers, or to a destination facility.
- Destination facilities recycle the lamps, or provide treatment, storage and disposal to a dangerous waste landfill.

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NOTE: Businesses that generate and manage dangerous wastes and universal wastes are considered both a dangerous waste generator, and a universal waste handler.

Significant Benefits

Benefits for managing dangerous waste lamps as universal waste include:

- Waste is not counted toward waste generation totals to determine generator status.
- Waste is not reported on the Dangerous Waste Annual Report.
- Waste does not need to be manifested when sent off-site.
- Accumulation time limit for universal waste is increased to one year.

What is the Difference Between the 1998 UWR and the UWR with Lamps?

There is one significant difference regarding when a lamp handler becomes a large quantity handler, subject to more requirements:

Handler Type	Pre-2000 Rule	New Rule with Lamps
Small Quantity Handler	Accumulate less than 11,000 pounds of Universal Waste	Accumulate less than 2,200 pounds of lamps, or less than 11,000 pounds of total universal waste, including lamps.
Large Quantity Handler	Accumulate 11,000 or more pounds of Universal Waste	Accumulate 2,200 or more pounds of dangerous waste lamps or 11,000 pounds of total universal waste (including lamps)

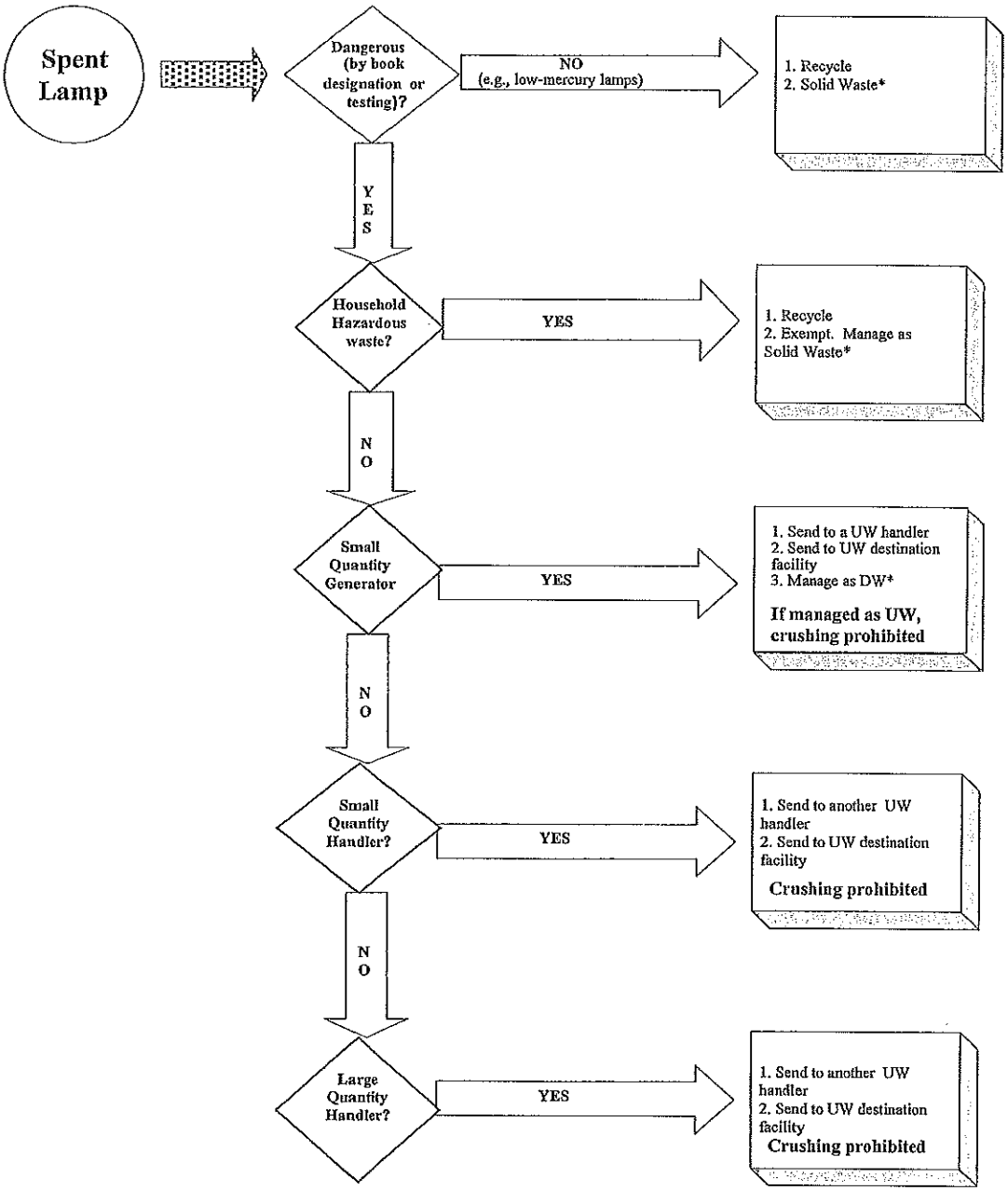
Is On-Site Lamp Crushing to Reduce Volume Allowed?

Universal waste lamp handlers and transporters cannot dispose of or treat universal waste lamps. **This prohibition on treatment includes lamp crushing**. Lamp crushing is considered a treatment-by-generator activity, subject to full regulation under the *Dangerous Waste Regulations.* Crushed lamps must be managed as dangerous waste unless they are shown to be non-dangerous through the designation process.

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Attachment 1

GENERATOR MANAGEMENT OPTIONS FOR WASTE LAMPS



*Check with local health department, solid waste agency or solid waste landfill operator

Attachment 2
UNIVERSAL WASTE LAMP MANAGEMENT REQUIREMENTS

NOTE: Small Quantity Generators (SQGs) are exempt from the UWR (they are subject only to WAC 173-303-070 (8)) and can manage dangerous waste lamps as SQG dangerous waste. Households are also exempt from the rule. Local governments and/or landfills, however, may restrict disposal by SQGs and households. (If a SQG generates dangerous waste lamps in quantities that would put them into a higher generator category, then they should choose to manage those lamps as universal waste to retain their SQG status.)

REQUIREMENTS	SMALL QUANTITY HANDLER	LARGE QUANTITY HANDLER	UW TRANSPORTER	UW DESTINATION FACILITY
Notification and EPA I.D.#	Not required	YES	Not required	YES
Immediately contain by placing in a container any lamps showing evidence of leakage, damage, etc.	YES	YES	YES	Regulated as a TSD or 24 hour recycler (WAC 173-303-140; 173-303-141; 173-303-280 through 173-303-525; 173-303-600 through –173-303-695; 173-303-800 through 173-303-840. OR, If a 24 hour recycler, WAC 173-303-120 (4)(c) 
Containerize in closed, structurally sound, compatible containers	YES	YES	YES	
Cardboard/fiber containers may be used (inside storage only)	YES	YES		
Container label required: "Waste Lamps", or "Universal Waste Lamps"	YES	YES		
Track length of time since waste lamp generation. Acceptable methods of proof: date on label, inventory system, etc.	YES	YES		
Response to Releases - Contain releases; determine if DW; if so, manage as specified in Chapter 173-303, WAC	YES	YES	YES	
Prohibited from disposing of Universal Waste	YES	YES	YES	
Treatment (includes crushing) prohibited	YES	YES	YES	
Accumulation Time Limit	One year (longer if proved necessary for proper management)	One year (longer if proved necessary for proper management)	10 days or less at UW transfer facility, otherwise becomes UW handler	
Employee Training	Inform appropriate employees of proper handling and emergency procedures	Ensure appropriate employees are thoroughly familiar with proper handling and emergency procedures	Not required under rule, but recommended	
Tracking of Waste Shipments	Recommended, but not required	Keep records (invoice, manifest, etc.) for 3 years of all shipments received and all shipments sent off-site	If UW is hazardous material under 49CFR171.8, describe in shipping papers per 49CFR Part 172	Keep records (invoice, manifest, etc.)for 3 years of all shipments received
Exporting	EPA Acknowledgment of Consent form from receiving country	EPA Acknowledgment of Consent form from receiving country	EPA Acknowledgment of Consent form must accompany shipment	EPA Acknowledgment of Consent form must accompany shipment
If UW is hazardous material under 49CFR171.8, follow applicable Dept. of Transportation regulations in 49CFR Part 171-180	If self-transporting, defined as a Universal Waste Transporter	If self-transporting, defined as a Universal Waste Transporter	YES	If self-transporting, defined as a Universal Waste Transporter

Attachment 3

FREQUENTLY ASKED QUESTIONS ABOUT UNIVERSAL WASTE LAMPS

Q What types of lamps are included in the UW rule?

A The rule includes, but is not limited to, fluorescent tubes, compact fluorescent, mercury vapor, metal halide, high-pressure sodium and neon lamps. The rule targets those lamps that are frequently used by businesses, institutions, government and utilities, and that are known to have hazardous properties that may cause them to be a dangerous waste, such as mercury and lead. Other types of lamps, such as incandescent, may also have hazardous properties, such as lead in the lamp base, that can cause them to be dangerous waste and as such could be managed as universal waste.

Q What is the difference between a generator and a handler under the UW rule?

A Under the universal waste rule a generator of universal waste is also considered a handler. A handler can be the generator of the lamp, or a business that receives, collects and then sends lamps on to another handler, or to a destination facility.

Q What does the UW rule mean for regulated generators of dangerous waste (medium quantity and large quantity generators)?

A Regulated generators of dangerous waste that also generate dangerous waste lamps should begin managing those lamps as universal waste. The benefits of managing the lamps as universal waste include no counting, no manifesting, no reporting on annual reports, and a longer accumulation time. The January 1995 policy on fluorescent tubes is being replaced by the universal waste rule, so regulated generators no longer have the option of sending their dangerous waste fluorescent tubes to a Municipal Solid Waste landfill.

Q A business doesn't generate any other dangerous waste, but they do have a lot of fluorescent lamps that get changed out – how does the UW rule affect them?

A The affect of the rule on the business depends on a few things. The first is whether or not the lamps are dangerous waste. If the lamps are dangerous waste, then the number of lamps generated and the local regulations for business lamp disposal will affect that business. For such a business, the quantity of dangerous waste lamps generated is going to determine their regulatory status. If the business generates more than 220 pounds of lamps at one time or during one month or accumulates more than 2,200 pounds of lamps at any time, then they would become a regulated dangerous waste generator unless they manage the lamps under the universal waste rule. If the business generates less than 220 pounds of dangerous waste lamps, then they would be considered a small quantity generator (SQG) and subject to the less stringent small quantity generator regulations found at WAC 173-303-070(8). They could choose to manage the lamps as universal waste, or choose to manage the lamps as SQG dangerous waste. The business should check with their local health department, solid waste agency or landfill operator for requirements.

Q A business is currently a small quantity generator (SQG) of dangerous waste, how does the UW rule affect them?

A A business that generates dangerous waste at the small quantity generator level may be affected by the rule. If, in addition to other dangerous wastes they generate, they generate or accumulate dangerous waste lamps in quantities that may push them over the SQG quantity exclusion limits, then they should manage those lamps as universal waste to retain their SQG status. If a business generates dangerous wastes, including dangerous waste lamps, under the SQG

quantity exclusion limits, then they may manage the lamps as SQG dangerous waste. The business should check with their local health department, solid waste agency or landfill operator for requirements.

Q Are manufacturers making lamps that are non-dangerous waste?

A The major lamp manufacturers are producing lamps that pass both the federal Toxicity Characteristic Leaching Procedure (TCLP) test and Ecology's static acute fish toxicity test for state criteria. Check with the lamp manufacturer, your local lamp distributor, or lighting contractor for more information on specific lamp models.

Q Can those non-dangerous waste lamps be managed as solid waste or do they need to be managed as universal waste?

A The universal waste rule only requires that dangerous waste lamps be managed as universal waste. Lamp models that have been shown to be non-dangerous waste would be eligible for disposal to a Municipal Solid Waste landfill, subject to local regulations and landfill operator approval. Of course, the non-dangerous waste lamps still have recyclable components, including glass and the aluminum end caps and metal bases. Additionally, these types of "green" lamps still contain mercury, and pass the TCLP not simply because of the lower mercury content, but because there are other unique lamp components or additives that aid in binding up the mercury so that it doesn't leach during the TCLP test. The manufacturers have all stated that removal of the unique components or additives will generally cause these lamps to fail the TCLP. As always, Ecology recommends recycling over disposal.

Q Will on-site lamp crushing to reduce volume space be allowed under the UW rule?

A No, Ecology did not include an on-site lamp crushing management option in the final universal waste rule. During the rule development, it was determined that the as-proposed performance-based lamp crushing standards were not enough to ensure that uncontrolled releases of mercury and other hazardous constituents would not occur from the use of lamp crushing units currently on the market. Because of this, Ecology could not ensure that handlers would be crushing lamps properly and in a way that did not release mercury or other hazardous constituents into the environment. To address this issue, Ecology would need to add layers of complexity to the universal waste rule in explaining such requirements as engineering controls and maintenance schedules. Adding more complex language and requirements would conflict with the purpose of the universal waste management system.

Q What happens if a universal waste lamp handler mismanages universal wastes?

A The universal waste rule is a subset of the full dangerous waste regulations, and a handler that mismanages universal waste is subject to enforcement. A handler that receives universal waste from others and mismanages the waste would be held liable for the actual regulatory violation, but the other handlers would also be responsible for that mismanagement under our state cleanup law, the Model Toxics Control Act. Since universal wastes are still dangerous wastes, persons remain liable under dangerous waste and cleanup regulations for remediation of any releases from universal waste management.

Q Can a handler of universal waste lamps self-transport universal wastes to another handler or destination facility?

A Yes, that handler may self-transport, but in doing so, must meet the UW transporter requirements.

Q Is a Hazardous Waste Manifest needed if a UW lamp handler chooses to send their UW lamps to a destination facility located in a state that hasn't adopted the universal waste rule for lamps?

A If those lamps are considered hazardous waste in the state the destination facility is located, then a Hazardous Waste Manifest would be required by the receiving state. Additionally, interstate transport of UW lamps may take the lamps through states that have not adopted the universal waste rule for lamps. Those states that have not adopted the universal waste rule for lamps may require a Hazardous Waste Manifest for the portion of the trip those lamps are in their state. Check with the destination facility and/or the states the lamps will travel through to be sure of the requirements.

Q Can I be a generator and a handler?

A Yes, a business that generates dangerous waste, (for example, a flammable solvent) and that generates and manages their universal waste would be considered both a dangerous waste generator and a universal waste handler. A handler of universal waste could also become a generator of dangerous waste. For example, a universal waste handler of lamps may have some lamps break, releasing mercury. The residue from the spill would most likely designate as a dangerous waste and would need managed as such. Residues from such spills could not continue to be managed as universal waste.

Attachment 4

SERVICES DIRECTORY FOR LAMPS AND BALLASTS

The Department of Ecology does not assume any liability for the accuracy or completeness of this information. A listing of a firm in this directory does not constitute a recommendation.

Name of Company	City	State	Phone	E-Mail Address	SERVICE
Able Clean-Up Technologies	Spokane	WA	(509) 466-5255	ksilverh2o@email.msn.com	Transportation of lamps and ballasts
Advanced Environmental Solutions	Seattle	WA	(206) 652-2323	justin@advenvironmental.com	Equipment & containers
Big Sky Industrial	Spokane	WA	(509) 624-4949	bigsky@iea.com	Arrange for ballast disposal
Creative Environmental Technologies	Tacoma	WA	(888) 627-3347, (253) 627-3347	ceti@cetinw.com	Arrange for lamp and ballast transportation
Earth Protection Services	Lake Oswego	OR	(503) 620-2466 (800) 588-7190	earthpro@cyberhighway.net	Lamp recycling and ballast management
Eastern Environmental Technologies	Port Chester	NY	(800) 808-PCBS	eet@erols.com	Lamp recycling and ballast management
Eco Lights NW	Seattle	WA	(206) 343-1247	amyf@totalreclaim.com	Full service lamp recycler and ballast management
Envirotech Systems	Seattle	WA	(800) 922-9395	envsys1@aol.com	Arrange for lamp recycling and ballast disposal
Evergreen Environmental	Aberdeen	WA	(360) 533-6141	LarryM@olynet.com	Arrange for ballast disposal
FBN Enterprises	Kirkland	WA	(425) 820-8115		Arrange for lamp and ballast reycling or disposal
Foss Environmental Services	Seattle	WA	(206) 768-1426	seattleinfo@foss.com	Transportation of lamps and ballasts
Lighting Resources	Phoenix	AZ	(800) 572-9253	ben@voidnet.com	Lamp recycling and ballast management
MCS Environmental	Spokane	WA	(509) 924-9236	mcsspok@ez.eznet	Arrange for lamp and ballast recycling or disposal
Mercury Technologies of Minnesota	Pine City	MN	(800) 864-3821	merctech@ecenet.com	Lamp recycling and ballast management
Midwest Recycling & Recovery Services	Dubuque	IA	(800) 311-9636		Arrange for lamp and ballast recycling or disposal
NSSI Recovery Services	Houston	TX	(713) 641-0391	rdgallagher@nssihouston.com	Limited lamp and ballast disposal services
Nu-Life Industries	Aldergrove	BC	(604) 857-5588	info@nulife-ind.com	Lamp recycling and non-PCB ballast management
Onyx Environmental Services, LLC	Tukwila	WA	(206) 241-3900 or (800) 334-2387	jim_beck@wastemanagement.com	Transportation of lamps and ballasts

Name of Company	City	State	Phone	E-Mail Address	SERVICE
Philip Services	Renton	WA	(425) 227-0311 or (800) 228-7872	londamay@philip-serv.com	Transportation of lamps and ballasts
Philip Services	Washougal	WA	(800) 547-2436	londamay@philip-serv.com	Transportation of lamps and ballasts
Phoenix Environmental	Fife	WA	(253) 779-8474		Limited t\ansportation of lamps and ballasts
Prezant Associates	Seattle	WA	(206) 368-4252 or (206) 281-8858	prezant@prezant.com	Industrial hygiene, safety and health consulting
Recyclights West LLC	Glendora Las Vegas	CA NV	(626) 335-3042 (702) 633-7900	recwest@aol.com	Lamp recycling at Las Vegas facility – no ballast management
Romic Environmental	Tacoma	WA	(253) 229-6569	gregc@romic.com	Transportation of lamps and ballasts to CA facility
RTW	University Place	WA	(253) 566-5819	mthinc@foxinternet.net	Arrange for lamp and ballast recycling or disposal
Safety Kleen, Auburn	Auburn	WA	(206) 939-2022		Transportation of lamps and ballasts
Safety Kleen, Lynnwood	Lynnwood	WA	(425) 775-7030		Transportation of lamps and ballasts
Safety Kleen, Pasco	Pasco	WA	(509) 547-8771	mikekendall@safetykleen.com	Transportation of lamps and ballasts
Safety Kleen, Spokane	Spokane	WA	(509) 928-8353	DavidBlackham@safetykleen.com	Transportation of lamps and ballasts
Superior Special Services (formerly Salesco Systems)	Phoenix	AZ	(800) 368-9095	mdezelon@ssusa.com	Lamp recycling and ballast management
Van Waters & Rogers, Kent	Kent	WA	(800) 909-4897	kraen.troutman@dwr-inc.com	Arrange for lamp recycling and ballast management
Van Waters & Rogers, Spokane	Spokane	WA	(800) 909-4897	ietxp@vwr-inc.com	Arrange for lamp recycling and ballast management
WasteXpress	Portland	OR	(503) 224-3206	wastex@easystreet.com	Transportation of lamps and ballasts

Appendix G: **Inspector / Laboratory Certifications**

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Certificate of Completion

This is to certify that

Matthew R. DeDominces

has satisfactorily completed
4 hours of refresher training as an

Asbestos Building Inspector

to comply with the training requirements of
TSCA Title II / 40 CFR 763 (AHERA)

134851
Certificate Number

Instructor
EPA Provider Cert. Number: 1085

ARGUS PACIFIC
TRAINING • CONSULTING

Jan 4, 2012
Date(s) of Training
Exam Score: NA
Expiration Date: Jan 3, 2013

Argus Pacific, Inc. • 1900 W. Nickerson, Suite 315 • Seattle, Washington • 98119 • 206.285.3373 • fax 206.285.3927

STATE OF WASHINGTON

Department of Commerce

Lead-Based Paint Program

Matthew R. De Dominces

Has fulfilled the certification requirements of Washington Administrative code (WAC) 365-230 and has been certified to conduct lead-based paint activities pursuant to WAC 365-230-200 as a:

Inspector

Certification #	Issuance Date	Expiration Date
6277	12/8/2010	12/8/2013

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101631-0

Pacific Rim Environmental, Inc.

Tukwila, WA

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2012-04-01 through 2013-03-31

Effective dates

DEPARTMENT OF COMMERCE
UNITED STATES OF AMERICA

David F. Alderman

For the National Institute of Standards and Technology

NVLAP-01C (REV. 2009-01-28)

National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Pacific Rim Environmental, Inc.
6510 Southcenter Boulevard
Suite #4
Tukwila, WA 98188
Mr. William F. Golloway
Phone: 206-244-8965 Fax: 206-244-9096
E-Mail: fgolloway@pacrimenv.com

BULK ASBESTOS FIBER ANALYSIS (PLM) **NVLAP LAB CODE 101631-0**

NVLAP Code	*Designation / Description*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

2012-04-01 through 2013-03-31
Effective dates

David F. Alderman
For the National Institute of Standards and Technology

PACIFIC RIM ENVIRONMENTAL, INC.

Regulated Building Material Survey

Block 21 – Hurricane Cafe
2230 7th Avenue
Seattle, WA



Performed for:

GeoEngineers, Inc.
Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, WA 98101

Prepared By:

DRAFT

Todd P. Carter, AHERA Inspector
CTED Lead Risk Assessor

Date Prepared: 11/12/2012
PRE#: 14762.02

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Section 1.0 Scope of Work
Block 21 - Hurricane Cafe - 2230 7th Avenue, Seattle, WA

Pacific Rim Environmental (PacRim) performed a limited regulated building material survey for Asbestos, Lead-based Paint and Universal Waste at the commercial structure located at 2230 7th Avenue in Seattle, WA.

Site: The site is occupied by one-story, approximately 5,302 square foot restaurant constructed in 1940.

Limitations: The building was occupied at time of inspection. Inspection and sampling was limited to accessible materials using discreet sample collection procedures. Additional inspection and destructive sampling must be performed once the building is vacated as part of the project design phase.

Field inspection, data collection, and report generation were performed according to the following:

Scope of Work

Asbestos-Containing Materials (ACM)

1. Bulk sampling and analysis of suspect asbestos-containing materials (ACM).
2. Analysis of suspect ACM by a NVLAP accredited laboratory.
3. Quantity estimates of ACM.
4. Review of existing survey report
5. Written report including recommendations based on the technician's observations, sample descriptions, and sample location.
6. Statement of Compliance with W.A.C. 296-62-07721 Sign-off form.

Lead-Based Paints (LBP)

7. Perform limited screening of suspect lead-based paints using XRF.
8. Written report including: Sample descriptions, conditions, locations, analytical results, and recommendations. (**See Section 4.0 for discussion of LBP conditions**)

Universal Waste Inventory

8. Inspect and inventory lights and equipment to identify fixture and lamp type to determine presence of PCB and/or mercury.

The survey was intended to identify possible asbestos-containing materials (ACM) on the interior and exterior of the building. This inspection covered only those areas, which were exposed and/or physically accessible to the inspector. Materials uncovered during the course of demolition, renovation, or maintenance activities that are not identified in this inspection report must be presumed to contain asbestos until PLM analysis proves that this material is not asbestos-containing.

This survey is not intended for, nor should be used as a design specification. The Asbestos in Schools Hazard Amendment and Reauthorization Act (ASHARA), effective November 20, 1990, expanded accreditation requirements to apply to persons who work with asbestos in public and commercial buildings as well as schools. Specifically, ASHARA expanded the Toxic Substances Control Act (TSCA) Section 206 (a) (1) and (3) to require accreditation for any person who designs or conducts a response action with respect to friable ACM in a building. TSCA Section 207 provides for civil penalties of $5,000 for each day of a violation for not employing accredited individuals to design and conduct response actions. Sampling of suspect asbestos-containing materials was conducted as prescribed in 40 CFR 763.86.

Suspect asbestos-containing materials within the structure were identified and classified as a surfacing material, thermal system insulation, or miscellaneous materials. Surfacing materials are those, which are either spray applied or troweled-on for acoustical, decorative, or fireproofing purposes. Thermal system insulation (TSI) is insulation used to inhibit heat transfer or to prevent condensation on pipes, boilers, tanks, ducts and various other components. Miscellaneous materials include all other materials not included in the above categories such as floor tile, ceiling tile, roofing felt, cementitious materials, wallboard systems and products such as caulking, mastics and putties.

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Bulk samples collected were submitted for sample analysis in accordance with method EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk building Materials". Analyses were performed in Pacific Rim Environmental Inc.'s NVLAP Accredited Laboratory (Lab Code 101631-0). Materials are positive for asbestos if they are found to contain greater than 1% or 1% asbestos.

A total of fourteen (14) samples were collected and submitted for PLM laboratory analysis. Six (6) of these samples were found to contain greater than 1% asbestos. A total of eight (8) visual samples were noted during the inspection. These materials must be treated as ACM until sampled.

Thermal Systems Insulation (TSI)

Suspect asbestos-containing **pipe insulation and elbows** was identified in the basement. The material is **Presumed Asbestos Containing Material (PACM)** until sample analysis can be performed. (Sample #V-8)

If during the course of wall, ceiling or floor demolition, any TSI materials that are not listed in this report are uncovered, sampling ***must*** be performed or the material presumed asbestos containing prior to disturbing these materials.

Surface Materials

Suspect asbestos-containing **exterior wall texture** was identified on building. The material was sampled and ***found to contain 10-15% Chrysotile Asbestos in the coating material.*** (Sample #01)

Suspect asbestos-containing **tile mosaic** was identified on exterior of the building. The material was sampled and ***no asbestos was detected.*** (Sample #02)

Suspect asbestos-containing **plaster on cement** was identified on the exterior wall by the kitchen entrance. The material was sampled and **no asbestos was detected.** (Sample # 07)

Suspect asbestos-containing **plaster on lath** was identified on the north wall at the kitchen freezer area. The material was sampled and **no asbestos was detected.** (Sample # 08)

Suspect asbestos-containing **plaster on GWB** was identified on the employee locker room wall and basement ceiling. The materials were sampled and **no asbestos was detected.** (Sample # 10 & 13)

Suspect asbestos-containing **plaster on GWB** was identified on the basement south wall. The material was sampled and ***found to contain 1-3% Chrysotile Asbestos in the skim coat-like material.*** (Sample # 12)

Suspect asbestos-containing **plaster** was identified in the dining room. The material is **Presumed Asbestos Containing Material (PACM)** until sample analysis can be performed. (Sample #V-3)

If during the course of wall, ceiling or floor demolition, any surfacing materials not identified in this report are uncovered, sampling ***must*** be performed or the material presumed asbestos containing prior to disturbing these materials.

Miscellaneous Materials

Suspect asbestos-containing **corrugated cement board** was identified on the façade top. The material was sampled and ***found to contain 7-10% Chrysotile Asbestos.*** (Sample #03)

Suspect asbestos-containing **12" black tile and mastic (1st layer)** was identified in the main dining area. The material was sampled and **no asbestos was detected.** (Sample #04)

Suspect asbestos-containing **tile and mastic (2nd layer)** was identified in the main dining area. The material was sampled and ***found to contain 10-15% Chrysotile Asbestos in the tile and 5-7% Chrysotile Asbestos in the mastic.*** (Sample #05)

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Section 2.0 Survey Narrative Continued
Block 21 – Hurricane Cafe - 2230 7th Avenue, Seattle, WA

Surface Materials – Continued

Suspect asbestos-containing **4" brown cove base and mastic** was identified in the main dining area. The material was sampled and ***found to contain 1-3% Tremolite in the mastic.*** (Sample #06)

Suspect asbestos-containing **red concrete flooring** was identified in the employee locker room. The material was sampled and ***found to contain 1-3% Chrysotile Asbestos in the flooring.*** (Sample #09)

Suspect asbestos-containing **12" blue speckled tile and mastic** was identified in the manager's office. The material was sampled and **no asbestos was detected.** (Sample #11)

Suspect asbestos-containing **mastic on tread** was identified on the stair to the basement. The material was sampled and **no asbestos was detected.** (Sample #14)

Suspect asbestos-containing **12" ceiling tile** was identified in the dining room and fun room. The material is **Presumed Asbestos Containing Material (PACM)** until sample analysis can be performed. (Sample #V-1 & 2)

Suspect asbestos-containing **sheet vinyl flooring** was identified in the dining area men's and women's restroom, kitchen freezer area and Manager's office. The material is **Presumed Asbestos Containing Material (PACM)** until sample analysis can be performed. (Sample #V-4-7)

If during the course of wall, ceiling or floor demolition or roof demolition, any miscellaneous materials that are not listed in this report are uncovered, sampling ***must*** be performed or the material presumed asbestos containing prior to disturbing these materials.

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Section 3.0 Statement of Compliance
Block 21 – Hurricane Cafe - 2230 7th Avenue, Seattle, WA

In accordance with W.A.C. 296-62-07721 and PSCAA Regulation III, Article 4, Pacific Rim Environmental, Inc. performed an asbestos survey of the subject structure Commercial Building located at 2230 7th Avenue in Seattle, WA.

Should employees or contract personnel encounter any suspect asbestos-containing materials (ACM) it is their responsibility to:

1. Contact a representative of the owner.
2. Consult the inspection report to determine whether or not the suspect material contains asbestos.
3. If the suspect material does not appear in the inspection report, then that material was not sampled and must be presumed to contain asbestos until proven otherwise by sampling and PLM analysis.
4. Ensure that all employees and contractors are informed and advised of the location and type of materials that contain asbestos.

The following asbestos-containing materials were identified at the subject property:

- **Exterior Wall Coating**
- **Corrugated Cement Board**
- **Tile and Mastic (Main Dining)**
- **4" Brown Cove Base (Main Dining)**
- **Red Concrete Flooring (Employee Locker Room)**
- **Plaster on GWB (Basement)**

The following **Presumed Asbestos Containing Materials** were identified at the subject property:

- **12" Ceiling Tile (Dining Room and Fun Room)**
- **Plaster (Main Dining Room)**
- **Sheet Vinyl Flooring (Dining Area Men's and Women's Bathroom, Freezer Area and Manager's Office)**
- **Insulation on Pipes and Elbows (Basement)**

The inspection report has been made available to me. I will inform all subcontractors of the location and types of materials containing asbestos. I am authorized to sign on behalf of my company.

Contractor:	_____	Owner's Rep:	_____
Signature:	_____	Signature:	_____
Print Name:	_____	Print Name:	_____
Title:	_____	Title:	_____
Date:	_____	Date:	_____

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Section 4.0 Lead-Based Paint Summary
Block 21 – Hurricane Cafe - 2230 7th Avenue, Seattle, WA

Lead based paint was identified on the following painted components. The presence of lead will require the collection of a TCLP sample to characterize the waste stream for disposal.

Lead was found in the following locations:

PRE#	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
Exterior						
4	Concrete	Lower wall	South exterior wall at east side	Brown	Positive	3.9
7	Concrete	Upper south wall	South exterior wall at east side	Green	Positive	5
14	Metal	Facia	At west exterior of building	Green	Positive	4.1
15	Concrete	Decorative façade	At west exterior of building	Green	Positive	1.1
16	Concrete	Lower wall	At north exterior of building	Brown	Positive	2.4
17	Concrete	Upper wall	At north exterior of building	Green	Positive	2.7
18	Concrete	Lower wall	At east exterior of building	Brown	Positive	4.9
Interior						
25	Concrete	Wall	Dining area, south wall	Green	Positive	23.3
28	Wood	Door pass through trim	East dining area	Red	Positive	1.3
29	Concrete	Wall	East dining area, south wall	Gold	Positive	7.4
30	Drywall	Fireplace flute	East dining area	Red	Positive	2
40	Concrete	Wall	Kitchen, north wall	White	Positive	1.6
42	Plaster	Wall	Kitchen, at wash station, south wall	White	Positive	1.8
44	Wood	Double door	Kitchen, first north exit door	Green	Positive	2.3
47	Wood	Lower wall	Manager's office, west wall	Gray	Positive	1.1

See XRF Data Sheets in Appendix D for a complete listing of all samples.

The only state rules or regulations that currently apply to lead-based paints are WAC 296-155-17603 Scope* and WAC 296-155-17607 Permissible Exposure Limit**. The WAC code states that if lead is detectable in the workplace in any quantity, initial air monitoring must be performed on employees doing demolition, renovation or remodeling work in areas found to have materials containing lead. Also, workers performing lead removal must be trained in accordance with WAC 296-155-17625.

The EPA/HUD standard uses a criterion of 5,000 parts per million (PPM) dry weight or 1.0 milligrams per square centimeter (1.0 mg/cm2) for lead-based paint. However, if lead is detected in any concentration, Federal OSHA and Washington State Department of Labor and Industries regulations will still apply, since neither agency has established a concentration of lead in paint below which the lead in construction standards do not apply.

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Section 5.0 Universal Waste Inventory
Block 21 – Hurricane Cafe - 2230 7th Avenue, Seattle, WA

Universal Waste Rules

The Universal Waste Rule (UWR) establishes alternative, streamlined waste management standards in place of most of the Dangerous Waste Regulations, Chapter 173-303 WAC, except for, WAC 173-303-050, 173-303-145 and 173-303-960. The following lamp types may be characterized as universal waste: fluorescent tubes, high intensity discharge (HID) lamps (mercury vapor, metal halide, high pressure sodium) and compact fluorescent.

Universal waste will be identified during the destructive sampling phase.

If found, universal waste must be removed and properly disposed of or recycled prior to building demolition.

Disposal of individual lamps is not regulated. However disposal of large quantities of lamps is subject to dangerous waste regulations (WAC 173-303) and the waste stream must be subjected to TCLP (Toxicity Characteristic Leaching Procedure) analysis to determine the amount of mercury that could leach out of the waste. The TCLP limit for mercury is 0.2 mg/L.

PCBs belong to a broad family of organic chemicals known as chlorinated hydrocarbons. PCBs are produced by the combination of one or more chlorine atoms and a biphenyl molecule. PCBs range in consistency from heavy oily liquids to waxy solids. Prior to 1979, PCBs were widely used in electrical equipment such as transformers, capacitors, switches, and voltage regulators.

A copy of the Washington State Department of Ecology *Universal Waste Rule for Dangerous Waste Lamps WAC 173-303-573*, Publication # 00-04-020 is provided in Appendix F.

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Appendix A: **Asbestos Sample Summary**

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Pacific Rim Environmental, Inc

Asbestos Summary

Project Name / Address: Block 21 - Hurricane Café / 2230 7th Ave., Seattle, WA 98121

Project ID	Sample #	Sample Location	AHERA Category	Sample Description	Asbestos Type/%	Approximate Quant.
14762.02	01	South exterior wall	Surfacing	Coating on building	Layer 1 (Texture): None detected Layer 2 (Coating material): Chrysotile 10-15%	8,400 Sq. Ft.
14762.02	02	Exterior decorative wall	Surfacing	Tile mosaic	None Detected (Both Layers)	N/A
14762.02	03	Façade top	Miscellaneous	Corrugated cement board	Chrysotile 7-10%	640 Sq. Ft.
14762.02	04	Main dining area, west end	Miscellaneous	12" black tile and mastic, first layer	None Detected (Both Layers)	N/A
14762.02	05	Main dining area, west end	Miscellaneous	tile and mastic, second layer	Layer 1 (Leveling compound): None detected Layer 2 (Tile): Chrysotile 10-15% Layer 3 (Mastic): Chrysotile 5-7%	5,250 Sq. Ft.
14762.02	06	Main dining area	Miscellaneous	4" brown cove base and mastic	Layer 1 (Cove base): None detected Layer 2 (Mastic): Tremolite 1-3%	400 Ln. Ft.
14762.02	07	Exterior wall at kitchen, north entrance	Surfacing	Plaster on cement	None Detected (Both Layers)	N/A
14762.02	08	North wall at kitchen freezer area	Surfacing	Plaster on lath	None Detected (Both Layers)	N/A
14762.02	09	Employee locker room, floor	Miscellaneous	Red concrete flooring	Layer1 (Flooring): Chrysotile 1-3%, Layer 2 (Cement material): None Detected	100 Sq. Ft.
14762.02	10	Employee locker room, wall	Surfacing	Plaster on GWB	None Detected (All Layers)	N/A

Project ID	Sample #	Sample Location	AHERA Category	Sample Description	Asbestos Type/%	Approximate Quant.
14762.02	11	Manager's office	Miscellaneous	12" blue speckled tile and mastic	None Detected (Both Layers)	N/A
14762.02	12	Basement, south wall	Surfacing	Plaster on GWB	Layer 1 (Skim coat-like material): Chrysotile 1-3% Layer 2 & Layer 3: None detected	800 Sq. Ft.
14762.02	13	Basement, ceiling	Surfacing	Plaster on GWB	None Detected (Both Layers)	N/A
14762.02	14	Stair to basement	Miscellaneous	Mastic on tread	None Detected	N/A
14762.02	V-1	Fun room	Miscellaneous	12" ceiling tile	PACM	306 Sq. Ft.
14762.02	V-2	Main dining area (also found in bar area)	Miscellaneous	12" ceiling tile	PACM	4,200 Sq. Ft.
14762.02	V-3	Main dining area, east wall	Surfacing	Plaster	PACM	4,000 Sq. Ft.
14762.02	V-4	Dining area women's bathroom, floor	Miscellaneous	SVF	PACM	100 Sq. Ft.
14762.02	V-5	Dining area men's bathroom, floor	Miscellaneous	SVF	PACM	80 Sq. Ft.
14762.02	V-6	Kitchen freezer area, floor	Miscellaneous	SVF	PACM	40 Sq. Ft.
14762.02	V-7	Manager's office	Miscellaneous	SVF	PACM	40 Sq. Ft.
14762.02	V-8	Basement, west side	TSI	Insulation of pipes and elbows	PACM	30 Ln. Ft., 10 elbows

Appendix B: **Bulk Sample Analysis Report**

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PACIFIC RIM ENVIRONMENTAL, INC.

BULK SAMPLE ANALYSIS REPORT

CLIENT:	**Geoengineers**	**PACRIM # :**	**14762.02**
	8410 154th Avenue NE	**REPORT # :**	2012-10-0236
	Redmond, WA 98052	**DATE RECEIVED :**	10/08/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 - Hurricane Cafe	**DATE ANALYZED :**	10/18/2012
	2230 7th Ave	**REPORT BY :**	Sarah Kreiner
	Seattle, WA 98121	**REPORT DATE :**	10/18/2012
		TURNAROUND:	5 Days
SAMPLE DATE:	10/08/2012	**PAGE :**	1 of 5

Attached are the results of analysis of 14 bulk samples submitted for asbestos identification: lab ID #2012-10-0136 through 2012-10-0249.

Samples were analyzed in accordance with method EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk Building Materials".

Unless otherwise noted, samples were inhomogeneous; subsamples of components were analyzed to achieve representative analysis. Separate layers of layered samples are analyzed and reported separately. Unless otherwise stated, asbestos content was quantified by calibrated visual estimation (CVES). CVES concentrations are reported in 2 to 3 percent ranges for fiber concentrations ranging from 1-10%, and 5 percent ranges for concentrations greater than 10%. Samples in which asbestos was not observed are reported as "none detected".

Limitations and Uncertainty:

Factors such as sample quality, sample size, interfering matrix material, fiber size, and fiber concentration contribute to the uncertainty of asbestos concentration measurements in bulk materials. Relative errors exceeding 100% may occur in samples containing <1-10% asbestos. Relative errors are typically below 30% in samples with greater than 10% asbestos, and approach zero as the asbestos concentration approaches 100%.

Asbestos fibers with diameters below approximately 0.25 micrometers are not detectable by PLM. These extremely fine fibers may occur in such products as floor tile, adhesives, and cement products. This limitation can be overcome, however, by the use of alternate analytical methods, such as Transmission Electron Microscopy (TEM).

This report cannot be represented by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. Test results pertain only to the samples submitted for analysis.

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NVLAP Accredited LAB #: 101631-0
Samples submitted by: PRE

Reports Reviewed By: *Approved Signatory*

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	Geoengineers 8410 154th Avenue NE Redmond, WA 98052	PACRIM # :	14762.02
		REPORT # :	2012-10-0236
		DATE RECEIVED :	10/08/2012
		ANALYST :	William F. Golloway
PROJECT:	Hurricane Cafe 2230 7th Ave	DATE ANALYZED :	10/18/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/18/2012
SAMPLE DATE:	10/08/2012	TURNAROUND:	5 Days
		PAGE :	2 of 5

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
1 2012-10-0236	**South exterior wall (Coating on building).** Light brown-painted, white, texture-like material (layer 1) on black-painted, green coating material and red paint (layer 2). **Note:** Tar and coating were inseparable.	**Layer 1** (Texture): None detected **Layer 2** (Coating material): **Chrysotile 10-15%**	**Layer 1:** Synthetics (<1%), Wollastonite (1-3%), Cellulose (<1%), Binder, Mineral Aggregate, Paint. **Layer 2:** Mineral Aggregate, Binder, Paint.	10/18/12
2 2012-10-0237	**Exterior decorative wall (Tile mosaic).** Green and blue-painted, white, chalky skim coat (layer 1) on light grey plaster (layer 2).	**Layer 1** (Skim coat): None detected **Layer 2** (Plaster): None detected	**Layer 1:** Wollastonite (1-3%), Binder, Mineral Aggregate, Paint. **Layer 2:** Cellulose (<1%), Mineral Aggregate, Binder.	10/18/12
3 2012-10-0238	**Façade top (Corrugated cement board).** Green-painted, light grey cement material.	**Chrysotile 7-10%**	Mineral Aggregate, Binder, Paint.	10/18/12
4 2012-10-0239	**Main dining area, west end (12" black tile and mastic, first layer).** Black floor tile (layer 1) with yellow mastic (layer 2).	**Layer 1** (Tile): None detected **Layer 2** (Mastic): None detected	**Layer 1:** Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/18/12

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	**Geoengineers** 8410 154th Avenue NE Redmond, WA 98052	**PACRIM # :**	**14762.02**
		REPORT # :	2012-10-0236
		DATE RECEIVED :	10/08/2012
		ANALYST :	William F. Golloway
PROJECT:	Hurricane Cafe 2230 7th Ave	**DATE ANALYZED :**	10/18/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/18/2012
SAMPLE DATE:	10/08/2012	**TURNAROUND:**	5 Days
		PAGE :	3 of 5

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
5 2012-10-0240	**Main dining area, west end (Tile and mastic, second layer).** Grey, fine-grained leveling compound (layer 1) on dark, red-brown floor tile (layer 2) with black tar mastic (layer 3).	**Layer 1** (Leveling compound): None detected **Layer 2** (Tile): **Chrysotile 10-15%** **Layer 3** (Mastic): **Chrysotile 5-7%**	**Layer 1:** Cellulose (<1%), Mineral Aggregate, Binder. **Layer 2:** Mineral Aggregate, Binder. **Layer 3:** Cellulose (<1%), Tar, Mineral Aggregate.	10/18/12
6 2012-10-0241	**Main dining area, west (4" cove base and mastic).** Black, flexible cove base mastic (layer 1) with brown mastic (layer 2).	**Layer 1** (Cove base): None detected **Layer 2** (Mastic): **Tremolite 1-3%**	**Layer 1:** Vinyl, Mineral Aggregate. **Layer 2:** Cellulose (<1%), Adhesive.	10/18/12
7 2012-10-0242	**East wall at kitchen north entrance (Plaster on cement).** Green-painted, white, chalky skim coat (layer 1) on light pink plaster-like material (layer 2).	**Layer 1** (Skim coat): None detected **Layer 2** (Plaster): None detected	**Layer 1:** Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Mineral Aggregate, Binder.	10/18/12
8 2012-10-0243	**North wall at kitchen freezer area (Plaster on lath).** Light grey-painted, light grey skim coat (layer 1) on light grey plaster (layer 2).	**Layer 1** (Skim coat): None detected **Layer 2** (Plaster): None detected	**Layer 1:** Cellulose (<1%), Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Mineral Aggregate, Binder.	10/18/12

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	**Geoengineers** 8410 154th Avenue NE Redmond, WA 98052	**PACRIM # :**	**14762.02**
		REPORT # :	2012-10-0236
		DATE RECEIVED :	10/08/2012
		ANALYST :	William F. Golloway
PROJECT:	Hurricane Cafe 2230 7th Ave	**DATE ANALYZED :**	10/18/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/18/2012
SAMPLE DATE:	10/08/2012	**TURNAROUND:**	5 Days
		PAGE :	4 of 5

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
9 2012-10-0244	**Employee locker room, floor (Red concrete flooring).** Red, hard, poured flooring-like material (layer 1) on white to light grey, cement material (layer 2).	**Layer 1** (Flooring): **Chrysotile 1-3%** **Layer 2** (Cement material): None detected	**Layer 1:** Cellulose (1-3%), Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Binder, Mineral Aggregate.	10/18/12
10 2012-10-0245	**Employee locker room, wall (Plaster on GWB).** White-painted, white skim coat (layer 1) on light grey plaster (layer 2) on white, chalky drywall with brown paper (layer 3).	**Layer 1** (Skim coat): None detected **Layer 2** (Plaster): None detected **Layer 3** (Drywall): None detected	**Layer 1:** Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (<1%), Mineral Aggregate, Binder. **Layer 3:** Cellulose (5-7%), Gypsum, Mineral Aggregate, Binder.	10/18/12
11 2012-10-0246	**Manager's office (12" blue speckled tile and mastic).** Grey floor tile (layer 1) with yellow mastic (layer 2).	**Layer 1** (Tile): None detected **Layer 2** (Mastic): None detected	**Layer 1:** Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/18/12

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

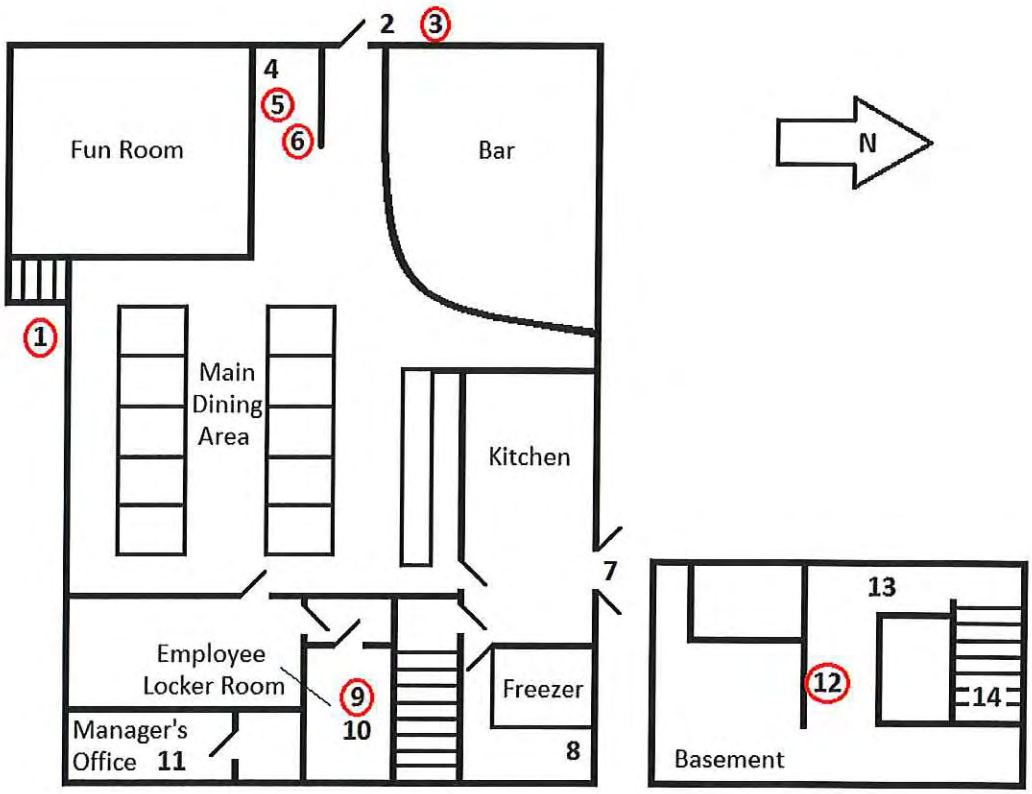
CLIENT:	Geoengineers 8410 154th Avenue NE Redmond, WA 98052	PACRIM # :	14762.02
		REPORT # :	2012-10-0236
		DATE RECEIVED :	10/08/2012
		ANALYST :	William F. Golloway
PROJECT:	Hurricane Cafe 2230 7th Ave	DATE ANALYZED :	10/18/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/18/2012
SAMPLE DATE:	10/08/2012	TURNAROUND:	5 Days
		PAGE :	5 of 5

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
12 2012-10-0247	**Basement, south wall (Plaster on GWB).** Light grey, thin plaster, skim coat-like material (layer 1), white-painted, light grey, plaster (layer 2) and white, chalky drywall with brown paper (layer 3). **Note:** Orientation of layer 1 with respect to layer 2 is uncertain.	**Layer 1** (Skim coat-like material): **Chrysotile 1-3%** **Layer 2** (Plaster): None detected **Layer 3** (Drywall): None detected	**Layer 1:** Cellulose (<1%), Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Animal Hair (<1%), Mineral Aggregate, Binder, Paint. **Layer 3:** Cellulose (1-3%). Gypsum, Mineral Aggregate, Binder.	10/18/12
13 2012-10-0248	**Basement, ceiling (Plaster on GWB).** White-painted, light grey plaster material (layer 1) with white, chalky drywall (layer 2).	**Layer 1** (Plaster): None detected **Layer 2** (Drywall): None detected	**Layer 1:** Cellulose (<1%), Animal Hair (<1%), Mineral Aggregate, Binder, Paint. **Layer 2:** Cellulose (1-3%), Gypsum, Mineral Aggregate, Binder.	10/18/12
14 2012-10-0249	**Stair to basement (Mastic on tread).** Brown mastic mixed with black, soft debris.	None detected	Cellulose (20-25%), Synthetics (1-3%), Fiberglass (<1%), Adhesive, Mineral Aggregate, Binder.	10/18/12

Appendix C: **Sample Location Drawings and Photos**

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Hurricane Cafe



Positive samples circled in red on drawing and bold in table below.

Sample #	Sample Location	Sample Description
01	**South exterior wall**	**Coating on building**
02	Exterior decorative wall	Tile mosaic
03	**Façade top**	**Corrugated cement board**
04	Main dining area, west end	12" black tile and mastic, first layer
05	**Main dining area, west end**	**Tile and mastic, second layer**
06	**Main dining area**	**4" brown cove base and mastic**
07	Exterior wall at kitchen, north entrance	Plaster on cement
08	North wall at kitchen freezer area	Plaster on lath
09	**Employee locker room, floor**	**Red concrete flooring**
10	Employee locker room, wall	Plaster on GWB
11	Manager's office	12" blue speckled tile and mastic
12	**Basement, south wall**	**Plaster on GWB**
13	Basement, ceiling	Plaster on GWB
14	Stair to basement	Mastic on tread

GeoEngineers Hurricane Cafe 2230 7th Ave. Seattle, WA	***Pacific Rim Environmental, Inc.*** 6510 Southcenter Boulevard, #4 Tukwila, WA 98188 Tel. (206) 244-8965 FAX (206) 244-9096	Project #: 14762.02 Drawing #: 01 of 01 Sampling Date: 10/08/12 Drawing By: Robin Sandstrom Drawing Not To Scale



Photo 1: South exterior wall, coating on building (Sample # 01).

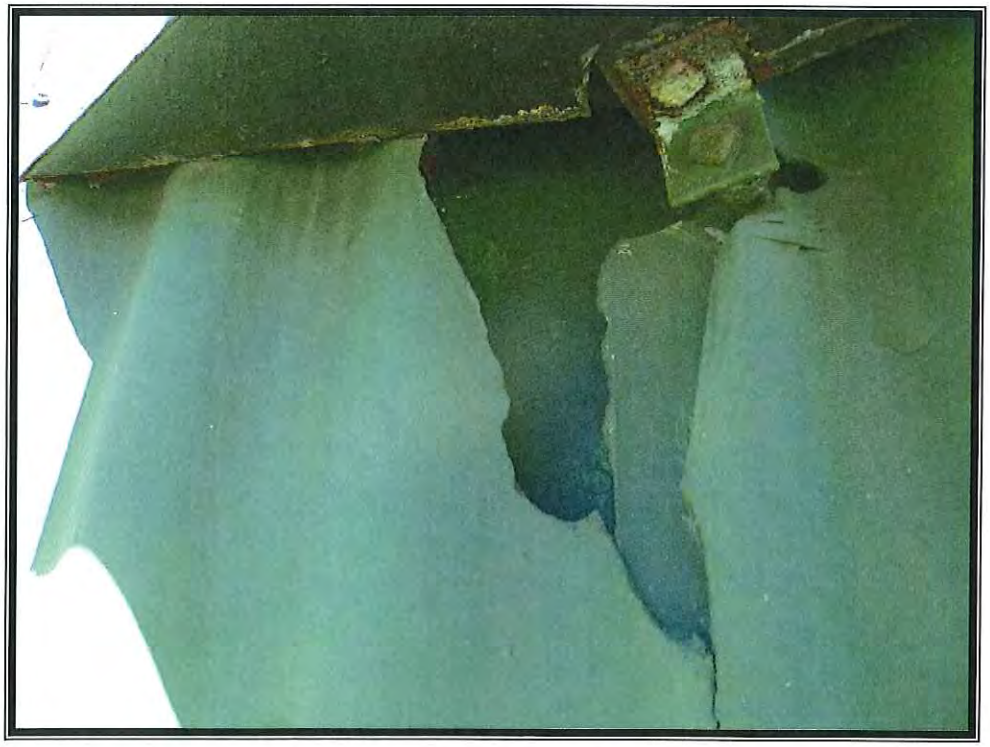


Photo 2: Façade top, corrugated cement board (Sample # 03).

GeoEngineers, Inc. Block 21 - Hurricane Cafe 2230 7th Avenue Seattle, WA	***Pacific Rim Environmental, Inc.*** 6510 Southcenter Boulevard, #4 Tukwila, WA 98188 Tel. (206) 244-8965 FAX (206) 244-9096	Project #: 14762.02 Photo Date: 10/08/2012



Photo 3: Main dining area, west end, tile and mastic, second layer (Sample # 05).



Photo 4: Main dining area west, 4" cove base and mastic (Sample # 06)



Photo 5: Employee locker room floor, red concrete flooring (Sample # 09).



Photo 6: Basement, south wall, plaster on GWB (Sample # 12).

GeoEngineers, Inc. Block 21 - Hurricane Cafe 2230 7th Avenue Seattle, WA	***Pacific Rim Environmental, Inc.*** 6510 Southcenter Boulevard, #4 Tukwila, WA 98188 Tel. (206) 244-8965 FAX (206) 244-9096	Project #: 14762.02 Photo Date: 10/08/2012

Appendix D: **XRF Data Sheets**

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Client:	**GeoEngineers, Inc** 600 Stewart St., Ste. 1700 Seattle, WA 98101	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP300-80662** **8-Oct-2012** **Matt DeDominces**
Project:	**Hurricane Café** 2230 7th Avenue Seattle, WA 98121	*PRE Job#:*	**14762.02**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
1	615	*First calibration check*				Positive	1.1
2	616	*First calibration check*				Positive	1.5
3	617	*First calibration check*				Negative	0.9
4	618	Concrete	Lower wall	South exterior wall at east side	Brown	Positive	3.9
5	619	Concrete	Lower south wall	South exterior wall at west side	Green	Negative	0
6	620	Concrete	Upper south wall	South exterior wall at west side	Brown	Negative	0.06
7	621	Concrete	Upper south wall	South exterior wall at east side	Green	Positive	5
8	622	Brick	Pillars	At west entrance to parking lot	Green	Negative	0.01
9	623	Metal	Post sign	At west exterior of building	Black	Negative	0.2
10	624	Concrete	Upper wall	At west exterior of building	Brown	Negative	0
11	625	Brick	Lower wall	At west exterior of building	Green	Negative	0
12	626	Concrete	Decorative wall	At west exterior of building	Multicolored	Negative	0
13	627	Wood	Window sill	At west exterior of building	Green	Negative	0
14	628	Metal	Facia	At west exterior of building	Green	Positive	4.1
15	629	Concrete	Decorative façade	At west exterior of building	Green	Positive	1.1
16	630	Concrete	Lower wall	At north exterior of building	Brown	Positive	2.4
17	631	Concrete	Upper wall	At north exterior of building	Green	Positive	2.7
18	632	Concrete	Lower wall	At east exterior of building	Brown	Positive	4.9
				Interior			
19	633	Wood	West wall	Upstairs west wall of dining area	Green	Negative	0
20	634	Concrete	West wall	Upstairs at fun room	Yellow	Negative	0
21	635	Wood	Ceiling	Fun room	Turquoise	Negative	0.01
22	636	Wood	Ceiling	Dining area	Green	Negative	0.5

Client:	**GeoEngineers, Inc** 600 Stewart St., Ste. 1700 Seattle, WA 98101	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP300-80662** **8-Oct-2012** **Matt DeDominces**
Project:	**Hurricane Café** 2230 7th Avenue Seattle, WA 98121	*PRE Job#:*	**14762.02**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
23	637	Wood	Wall	Dining area, south upper wall	Red	Negative	0.01
24	638	Concrete	Wall	Dining area, south wall	Gold	Negative	0.05
25	639	Concrete	Wall	Dining area, south wall	Green	Positive	23.3
26	640	Drywall	Half wall	Dining area, center booth	Gold	Negative	0
27	641	Wood	Half wall cap	Dining area, center booth	Red	Negative	0
28	642	Wood	Door pass through trim	East dining area	Red	Positive	1.3
29	643	Concrete	Wall	East dining area, south wall	Gold	Positive	7.4
30	644	Drywall	Fireplace flute	East dining area	Red	Positive	2
31	645	Brick	Round wall	Bar entrance	Red	Negative	0
32	646	Drywall	Upper wall	Bar entrance	Green	Negative	0
33	647	Wood	Wall	Bar entrance	Red	Negative	0
34	648	Brick	Wall	Bar, west wall	Brown	Negative	0
35	649	Drywall	Wall	Bar, south wall	Brown	Negative	0
36	650	Wood	Post	Bar, at pool room	Blue	Negative	0
37	651	Concrete	Wall	Bar bathroom, east wall	Dark-blue	Negative	0.1
38	652	Concrete	Wall	Bar bathroom	Brown	Negative	0.3
39	653	Metal	Stall doors	Bar bathroom	Blue	Negative	0
40	654	Concrete	Wall	Kitchen, north wall	White	Positive	1.6
41	655	Wood	South wall	Kitchen, at walk-in freezer	Red	Negative	0.6
42	656	Plaster	Wall	Kitchen, at wash station, south wall	White	Positive	1.8
43	657	Plaster	Wall	Kitchen, at east wall of cooking area	Red	Negative	0
44	658	Wood	Double door	Kitchen, first north exit door	Green	Positive	2.3
45	659	Wood	Double door	Kitchen, second north exit door	Black	Negative	0.05

Client: **GeoEngineers, Inc**
600 Stewart St., Ste. 1700
Seattle, WA 98101

Project: **Hurricane Café**
2230 7th Avenue
Seattle, WA 98121

XRF Serial #: **XLP300-80662**
Inspection Date: **8-Oct-2012**
Inspection By: **Matt DeDominces**

PRE Job#: **14762.02**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
46	660	Metal	Doors	Kitchen, west freezer doors	White	Negative	0.1
47	661	Wood	Lower wall	Manager's office, west wall	Gray	Positive	1.1
48	662	Plaster	North wall	Stairwell to basement	White	Negative	0.4
49	663	Plaster	Wall	Basement, north wall	Red	Negative	0
50	664	Metal	Door	Basement	Gray	Negative	0.6
51	665	Concrete	Wall	Basement, south wall	Cream	Negative	0.01
52	666	Concrete	Ceiling	Basement	Cream	Negative	0.04
53	667	Concrete	Wall	Basement, north wall	White	Negative	0
54	668	Wood	Door	Basement, door to north storage	Brown	Negative	0.1
55	669	Wood	Freezer door	Basement	Gray	Negative	0.05
56	670	*Last calibration check*				Positive	1.2
57	671	*Last calibration check*				Negative	0.7
58	672	*Last calibration check*				Positive	1.1

Report by: Robin Sandstrom
Date: 10/10/12

Appendix E: **XRF Performance Characteristic Sheet**

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Performance Characteristic Sheet

EFFECTIVE DATE: **September 24, 2004** **EDITION NO.: 1**

MANUFACTURER AND MODEL:

Make: *Niton LLC*
Tested Model: *XLp 300*
Source: ^{109}Cd
Note: This PCS is also applicable to the equivalent model variations indicated below, for the Lead-in-Paint K+L variable reading time mode, in the XLi and XLp series:

XLi 300A, XLi 301A, XLi 302A and XLi 303A.
XLp 300A, XLp 301A, XLp 302A and XLp 303A.
XLi 700A, XLi 701A, XLi 702A and XLi 703A.
XLp 700A, XLp 701A, XLp 702A, and XLp 703A.

Note: The XLi and XLp versions refer to the shape of the handle part of the instrument. The differences in the model numbers reflect other modes available, in addition to Lead-in-Paint modes. The manufacturer states that specifications for these instruments are identical for the source, detector, and detector electronics relative to the Lead-in-Paint mode.

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Lead-in-Paint K+L variable reading time mode.

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm^2 (inclusive)

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm^2 in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm^2 film).

If readings are outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instruments into control before XRF testing proceeds.

SUBSTRATE CORRECTION:

For XRF results using Lead-in-Paint K+L variable reading time mode, substrate correction is <u>not</u> needed for:

Brick, Concrete, Drywall, Metal, Plaster, and Wood

INCONCLUSIVE RANGE OR THRESHOLD:

K+L MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm^2)
Results not corrected for substrate bias on any substrate	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	1.0
	Plaster	1.0
	Wood	1.0

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated from the EPA/HUD evaluation using archived building components. Testing was conducted in August 2004 on 133 testing combinations. The instruments that were used to perform the testing had new sources; one instrument's was installed in November 2003 with 40 mCi initial strength, and the other's was installed June 2004 with 40 mCi initial strength.

OPERATING PARAMETERS:

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Substrate correction is not needed for brick, concrete, drywall, metal, plaster or wood when using Lead-in-Paint K+L variable reading time mode, the normal operating mode for these instruments. If substrate correction is desired, refer to Chapter 7 of the HUD Guidelines for guidance on correcting XRF results for substrate bias.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing. Use the K+L variable time mode readings.

Conduct XRF retesting at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below.

Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family housing a result is defined as the average of three readings. In multifamily housing, a result is a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF results.

Compute the average of all ten re-test XRF results.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

For the Lead-in-Paint K+L variable reading time mode, the instrument continues to read until it is moved away from the testing surface, terminated by the user, or the instrument software indicates the reading is complete. The following table provides testing time information for this testing mode. The times have been adjusted for source decay, normalized to the initial source strengths as noted above. Source strength and type of substrate will affect actual testing times. At the time of testing, the instruments had source strengths of 26.6 and 36.6 mCi.

Testing Times Using K+L Reading Mode (Seconds)						
	All Data			Median for laboratory-measured lead levels (mg/cm^2)		
Substrate	25^{th} Percentile	Median	75^{th} Percentile	Pb < 0.25	0.25 ≤ Pb<1.0	1.0 ≤ Pb
Wood Drywall	4	11	19	11	15	11
Metal	4	12	18	9	12	14
Brick Concrete Plaster	8	16	22	15	18	16

CLASSIFICATION RESULTS:

XRF results are classified as positive if they are greater than or equal to the threshold, and negative if they are less than the threshold.

DOCUMENTATION:

A document titled *Methodology for XRF Performance Characteristic Sheets* provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. For a copy of this document call the National Lead Information Center Clearinghouse at 1-800-424-LEAD.

This XRF Performance Characteristic Sheet was developed by the Midwest Research Institute (MRI) and QuanTech, Inc., under a contract between MRI and the XRF manufacturer. HUD has determined that the information provided here is acceptable when used as guidance in conjunction with Chapter 7, Lead-Based Paint Inspection, of HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.*

Appendix F: **Universal Waste Rule WAC 173-303-573**

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

Focus

Universal Waste Rule for Dangerous Waste Lamps WAC 173-303-573

Background

The Universal Waste Rule (UWR) establishes alternative, streamlined waste management standards in place of most of the Dangerous Waste Regulations, Chapter 173-303 WAC, except for, WAC 173-303-050, 173-303-145 and 173-303-960. Universal wastes are certain dangerous wastes that are frequently generated, and that are able to be managed appropriately under less stringent regulatory requirements. The Universal Waste Rule for batteries and mercury-containing thermostats has been in place in Washington State since 1998. For more information on the original UWR, refer to Ecology publication number 98-407 (Revised).

In June 2000, Ecology added lamps that are dangerous waste to the UWR. This rule replaces the "Interim Policy on Waste Management of Spent Fluorescent Light Tubes," dated January 30, 1995.

Universal Waste Categories of Lamps

The types of lamps that may be universal waste include:

- Fluorescent tubes
- High density (HID) lamps (mercury vapor, metal halide, high pressure sodium)
- Compact fluorescent
- Neon lamps[1]
- Any other lamps that are dangerous waste

[1] *"Neon" lamp manufacturers do not always use the inert gas neon, some are manufactured using mercury and phosphor powder.*

June 2000

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Publication # 00-04-020

Why Do We Care About Lamps?

Nationally, about 600 million lamps are disposed of annually, most to solid waste disposal facilities, including landfills and solid waste incinerators. In fluorescent lamps, mercury is the main concern and is present in lamps primarily in vapor form.

- The average mercury content in a fluorescent tube manufactured in 1999 is approximately 12 milligrams.
- Pre-1999 manufactured fluorescent tubes can have from 15 to 50 milligrams.
- High intensity discharge lamps may contain up to 250 milligrams, depending on the lamp wattage.

During solid waste handling and disposal many lamps break releasing mercury vapor and potentially exposing solid waste handlers to inhalation of those vapors. Solid waste incineration of mercury containing lamps also releases the mercury into the atmosphere. Mercury in the atmosphere is eventually deposited back to the earth.



Health & Environmental Hazards of Mercury

- Health risk from inhalation or absorption
- Causes neurological disorders
- Persistent, bioaccumulative and toxic
- Major cause of contaminated fish advisories

Some lamps may also contain lead in the glass and lead solder used in the lamp base. Lead is a toxic metal that may leach from solid waste landfills into the ground water. Manufacturers are eliminating the lead by using nonleaded glass and solders in newer lamps.

How to Know if a Lamp is Dangerous Waste

Lamps are known to designate as dangerous waste because of their mercury and/or lead content. Lamps may be assumed to be dangerous waste, they may be "book designated" using manufacturers' information, or they may be designated through sampling and testing.

Certain "green" lamps are available that contain less mercury and do not designate as dangerous waste. Ask your lamp manufacturer for data sheets to use when making waste determinations for these lamps. Check with your local health department, solid waste agency, or landfill for recycling or disposal options.

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Should Fluorescent Lamps Still be Used?

YES! Fluorescent tubes use one-quarter of the energy used by incandescent lamps for the same amount of light and last as much as ten times longer than incandescent bulbs. Compact fluorescent lamps last far longer than conventional tubes. The lamps used for lighting streets, playfields, and parking lots should also be selected for energy conservation. Energy conservation reduces mercury emissions from fossil fuel burning power plants. Using less electricity – which we can do by using energy-saving lighting – is the best protection for health and the environment.

Who is Affected by the UWR for Lamps?

- Regulated generators of dangerous waste (Medium Quantity and Large Quantity Generators)
- Businesses that generate or accumulate dangerous waste lamps in regulatedquantities (this category may include commercial building/property owners that maintain the lighting for tenants)
- Businesses that provide collection and management services (e.g., lighting contractors)

Regulated generators of dangerous waste generate over 220 pounds of total dangerous waste per month or batch (or 2.2 pounds of extremely hazardous waste), or accumulate greater than 2,200 pound of dangerous waste (or 2.2 pounds of extremely hazardous waste) at any time. As a point of reference, four (4), four-foot long, linear fluorescent tubes equal approximately 2.2 pounds. It would take about 400 of those tubes to equal 220 pounds and approximately 4,000 of those tubes to equal 2,200 pounds.

***NOTE:** Small Quantity Generators (SQGs) are exempt from the UWR (they are subject to WAC 173-303-070(8)) and can manage dangerous waste lamps as SQG dangerous waste. Households are also exempt from the rule. Local governments and/or landfills, however, may restrict disposal by SQGs and households. (If a SQG generates dangerous waste lamps in quantities that would put them into a higher generator category, they should choose to manage those lamps as universal waste to retain their SQG status.*

Under the UWR, there are small quantity handlers, large quantity handlers, transporters and destination facilities.

- Handlers are the generators of the universal waste or businesses that receive and collect universal waste before shipping to another handler or to a destination facility.
- Transporters transport the lamps between handlers, or to a destination facility.
- Destination facilities recycle the lamps, or provide treatment, storage and disposal to a dangerous waste landfill.

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NOTE: Businesses that generate and manage dangerous wastes and universal wastes are considered both a dangerous waste generator, and a universal waste handler.

Significant Benefits

Benefits for managing dangerous waste lamps as universal waste include:

- Waste is not counted toward waste generation totals to determine generator status.
- Waste is not reported on the Dangerous Waste Annual Report.
- Waste does not need to be manifested when sent off-site.
- Accumulation time limit for universal waste is increased to one year.

What is the Difference Between the 1998 UWR and the UWR with Lamps?

There is one significant difference regarding when a lamp handler becomes a large quantity handler, subject to more requirements:

Handler Type	Pre-2000 Rule	New Rule with Lamps
Small Quantity Handler	Accumulate less than 11,000 pounds of Universal Waste	Accumulate less than 2,200 pounds of lamps, or less than 11,000 pounds of total universal waste, including lamps.
Large Quantity Handler	Accumulate 11,000 or more pounds of Universal Waste	Accumulate 2,200 or more pounds of dangerous waste lamps or 11,000 pounds of total universal waste (including lamps)

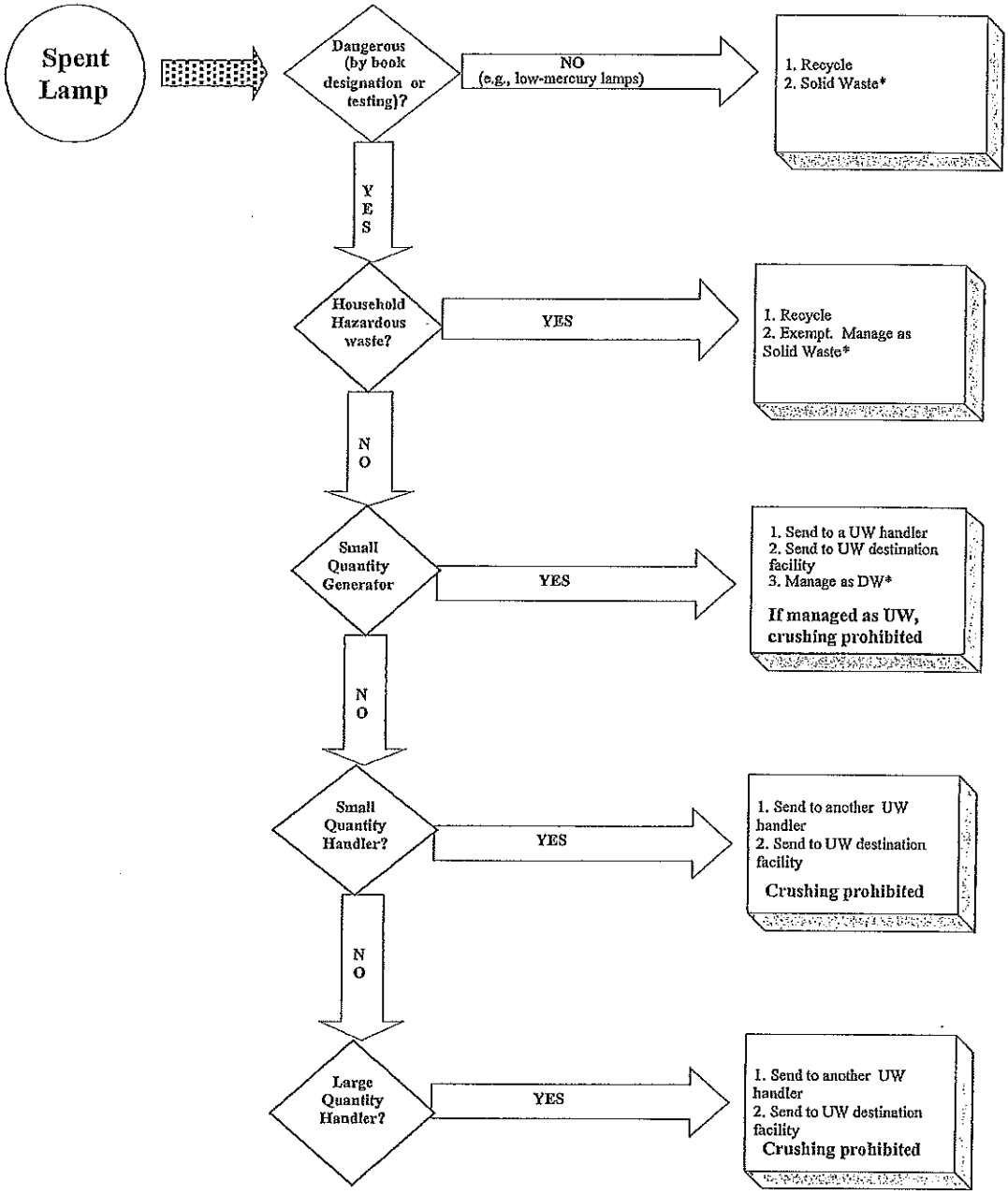
Is On-Site Lamp Crushing to Reduce Volume Allowed?

Universal waste lamp handlers and transporters cannot dispose of or treat universal waste lamps. **This prohibition on treatment includes lamp crushing.** Lamp crushing is considered a treatment-by-generator activity, subject to full regulation under the *Dangerous Waste Regulations.* Crushed lamps must be managed as dangerous waste unless they are shown to be non-dangerous through the designation process.

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Attachment 1

GENERATOR MANAGEMENT OPTIONS FOR WASTE LAMPS



*Check with local health department, solid waste agency or solid waste landfill operator

Attachment 2
UNIVERSAL WASTE LAMP MANAGEMENT REQUIREMENTS

NOTE: Small Quantity Generators (SQGs) are exempt from the UWR (they are subject only to WAC 173-303-070 (8)) and can manage dangerous waste lamps as SQG dangerous waste. Households are also exempt from the rule. Local governments and/or landfills, however, may restrict disposal by SQGs and households. (If a SQG generates dangerous waste lamps in quantities that would put them into a higher generator category, then they should choose to manage those lamps as universal waste to retain their SQG status.)

REQUIREMENTS	SMALL QUANTITY HANDLER	LARGE QUANTITY HANDLER	UW TRANSPORTER	UW DESTINATION FACILITY
Notification and EPA I.D.#	Not required	YES	Not required	YES
Immediately contain by placing in a container any lamps showing evidence of leakage, damage, etc.	YES	YES	YES	Regulated as a TSD or 24 hour recycler (WAC 173-303-140; 173-303-141; 173-303-280 through 173-303-525; 173-303-600 through –173-303-695; 173-303-800 through 173-303-840. OR, If a 24 hour recycler, WAC 173-303-120 (4)(c)
Containerize in closed, structurally sound, compatible containers	YES	YES	YES	
Cardboard/fiber containers may be used (inside storage only)	YES	YES		
Container label required: "Waste Lamps", or "Universal Waste Lamps"	YES	YES		
Track length of time since waste lamp generation. Acceptable methods of proof: date on label, inventory system, etc.	YES	YES		
Response to Releases - Contain releases; determine if DW; if so, manage as specified in Chapter 173-303, WAC	YES	YES	YES	
Prohibited from disposing of Universal Waste	YES	YES	YES	
Treatment (includes crushing) prohibited	YES	YES	YES	
Accumulation Time Limit	One year (longer if proved necessary for proper management)	One year (longer if proved necessary for proper management)	10 days or less at UW transfer facility, otherwise becomes UW handler	
Employee Training	Inform appropriate employees of proper handling and emergency procedures	Ensure appropriate employees are thoroughly familiar with proper handling and emergency procedures	Not required under rule, but recommended	
Tracking of Waste Shipments	Recommended, but not required	Keep records (invoice, manifest, etc.) for 3 years of all shipments received and all shipments sent off-site	If UW is hazardous material under 49CFR171.8, describe in shipping papers per 49CFR Part 172	Keep records (invoice, manifest, etc.)for 3 years of all shipments received
Exporting	EPA Acknowledgment of Consent form from receiving country	EPA Acknowledgment of Consent form from receiving country	EPA Acknowledgment of Consent form must accompany shipment	EPA Acknowledgment of Consent form must accompany shipment
If UW is hazardous material under 49CFR171.8, follow applicable Dept. of Transportation regulations in 49CFR Part 171-180	If self-transporting, defined as a Universal Waste Transporter	If self-transporting, defined as a Universal Waste Transporter	YES	If self-transporting, defined as a Universal Waste Transporter

Attachment 3

FREQUENTLY ASKED QUESTIONS ABOUT UNIVERSAL WASTE LAMPS

Q What types of lamps are included in the UW rule?

A The rule includes, but is not limited to, fluorescent tubes, compact fluorescent, mercury vapor, metal halide, high-pressure sodium and neon lamps. The rule targets those lamps that are frequently used by businesses, institutions, government and utilities, and that are known to have hazardous properties that may cause them to be a dangerous waste, such as mercury and lead. Other types of lamps, such as incandescent, may also have hazardous properties, such as lead in the lamp base, that can cause them to be dangerous waste and as such could be managed as universal waste.

Q What is the difference between a generator and a handler under the UW rule?

A Under the universal waste rule a generator of universal waste is also considered a handler. A handler can be the generator of the lamp, or a business that receives, collects and then sends lamps on to another handler, or to a destination facility.

Q What does the UW rule mean for regulated generators of dangerous waste (medium quantity and large quantity generators)?

A Regulated generators of dangerous waste that also generate dangerous waste lamps should begin managing those lamps as universal waste. The benefits of managing the lamps as universal waste include no counting, no manifesting, no reporting on annual reports, and a longer accumulation time. The January 1995 policy on fluorescent tubes is being replaced by the universal waste rule, so regulated generators no longer have the option of sending their dangerous waste fluorescent tubes to a Municipal Solid Waste landfill.

Q A business doesn't generate any other dangerous waste, but they do have a lot of fluorescent lamps that get changed out – how does the UW rule affect them?

A The affect of the rule on the business depends on a few things. The first is whether or not the lamps are dangerous waste. If the lamps are dangerous waste, then the number of lamps generated and the local regulations for business lamp disposal will affect that business. For such a business, the quantity of dangerous waste lamps generated is going to determine their regulatory status. If the business generates more than 220 pounds of lamps at one time or during one month or accumulates more than 2,200 pounds of lamps at any time, then they would become a regulated dangerous waste generator unless they manage the lamps under the universal waste rule. If the business generates less than 220 pounds of dangerous waste lamps, then they would be considered a small quantity generator (SQG) and subject to the less stringent small quantity generator regulations found at WAC 173-303-070(8). They could choose to manage the lamps as universal waste, or choose to manage the lamps as SQG dangerous waste. The business should check with their local health department, solid waste agency or landfill operator for requirements.

Q A business is currently a small quantity generator (SQG) of dangerous waste, how does the UW rule affect them?

A A business that generates dangerous waste at the small quantity generator level may be affected by the rule. If, in addition to other dangerous wastes they generate, they generate or accumulate dangerous waste lamps in quantities that may push them over the SQG quantity exclusion limits, then they should manage those lamps as universal waste to retain their SQG status. If a business generates dangerous wastes, including dangerous waste lamps, under the SQG

quantity exclusion limits, then they may manage the lamps as SQG dangerous waste. The business should check with their local health department, solid waste agency or landfill operator for requirements.

Q Are manufacturers making lamps that are non-dangerous waste?

A The major lamp manufacturers are producing lamps that pass both the federal Toxicity Characteristic Leaching Procedure (TCLP) test and Ecology's static acute fish toxicity test for state criteria. Check with the lamp manufacturer, your local lamp distributor, or lighting contractor for more information on specific lamp models.

Q Can those non-dangerous waste lamps be managed as solid waste or do they need to be managed as universal waste?

A The universal waste rule only requires that dangerous waste lamps be managed as universal waste. Lamp models that have been shown to be non-dangerous waste would be eligible for disposal to a Municipal Solid Waste landfill, subject to local regulations and landfill operator approval. Of course, the non-dangerous waste lamps still have recyclable components, including glass and the aluminum end caps and metal bases. Additionally, these types of "green" lamps still contain mercury, and pass the TCLP not simply because of the lower mercury content, but because there are other unique lamp components or additives that aid in binding up the mercury so that it doesn't leach during the TCLP test. The manufacturers have all stated that removal of the unique components or additives will generally cause these lamps to fail the TCLP. As always, Ecology recommends recycling over disposal.

Q Will on-site lamp crushing to reduce volume space be allowed under the UW rule?

A No, Ecology did not include an on-site lamp crushing management option in the final universal waste rule. During the rule development, it was determined that the as-proposed performance-based lamp crushing standards were not enough to ensure that uncontrolled releases of mercury and other hazardous constituents would not occur from the use of lamp crushing units currently on the market. Because of this, Ecology could not ensure that handlers would be crushing lamps properly and in a way that did not release mercury or other hazardous constituents into the environment. To address this issue, Ecology would need to add layers of complexity to the universal waste rule in explaining such requirements as engineering controls and maintenance schedules. Adding more complex language and requirements would conflict with the purpose of the universal waste management system.

Q What happens if a universal waste lamp handler mismanages universal wastes?

A The universal waste rule is a subset of the full dangerous waste regulations, and a handler that mismanages universal waste is subject to enforcement. A handler that receives universal waste from others and mismanages the waste would be held liable for the actual regulatory violation, but the other handlers would also be responsible for that mismanagement under our state cleanup law, the Model Toxics Control Act. Since universal wastes are still dangerous wastes, persons remain liable under dangerous waste and cleanup regulations for remediation of any releases from universal waste management.

Q Can a handler of universal waste lamps self-transport universal wastes to another handler or destination facility?

A Yes, that handler may self-transport, but in doing so, must meet the UW transporter requirements.

Q Is a Hazardous Waste Manifest needed if a UW lamp handler chooses to send their UW lamps to a destination facility located in a state that hasn't adopted the universal waste rule for lamps?

A If those lamps are considered hazardous waste in the state the destination facility is located, then a Hazardous Waste Manifest would be required by the receiving state. Additionally, interstate transport of UW lamps may take the lamps through states that have not adopted the universal waste rule for lamps. Those states that have not adopted the universal waste rule for lamps may require a Hazardous Waste Manifest for the portion of the trip those lamps are in their state. Check with the destination facility and/or the states the lamps will travel through to be sure of the requirements.

Q Can I be a generator and a handler?

A Yes, a business that generates dangerous waste, (for example, a flammable solvent) and that generates and manages their universal waste would be considered both a dangerous waste generator and a universal waste handler. A handler of universal waste could also become a generator of dangerous waste. For example, a universal waste handler of lamps may have some lamps break, releasing mercury. The residue from the spill would most likely designate as a dangerous waste and would need managed as such. Residues from such spills could not continue to be managed as universal waste.

Attachment 4

SERVICES DIRECTORY FOR LAMPS AND BALLASTS

The Department of Ecology does not assume any liability for the accuracy or completeness of this information. A listing of a firm in this directory does not constitute a recommendation.

Name of Company	City	State	Phone	E-Mail Address	SERVICE
Able Clean-Up Technologies	Spokane	WA	(509) 466-5255	ksilverh2o@email.msn.com	Transportation of lamps and ballasts
Advanced Environmental Solutions	Seattle	WA	(206) 652-2323	justin@advenvironmental.com	Equipment & containers
Big Sky Industrial	Spokane	WA	(509) 624-4949	bigsky@iea.com	Arrange for ballast disposal
Creative Environmental Technologies	Tacoma	WA	(888) 627-3347, (253) 627-3347	ceti@cetinw.com	Arrange for lamp and ballast transportation
Earth Protection Services	Lake Oswego	OR	(503) 620-2466 (800) 588-7190	earthpro@cyberhighway.net	Lamp recycling and ballast management
Eastern Environmental Technologies	Port Chester	NY	(800) 808-PCBS	eet@erols.com	Lamp recycling and ballast management
Eco Lights NW	Seattle	WA	(206) 343-1247	amyf@totalreclaim.com	Full service lamp recycler and ballast management
Envirotech Systems	Seattle	WA	(800) 922-9395	envsys1@aol.com	Arrange for lamp recycling and ballast disposal
Evergreen Environmental	Aberdeen	WA	(360) 533-6141	LarryM@olynet.com	Arrange for ballast disposal
FBN Enterprises	Kirkland	WA	(425) 820-8115		Arrange for lamp and ballast reycling or disposal
Foss Environmental Services	Seattle	WA	(206) 768-1426	seattleinfo@foss.com	Transportation of lamps and ballasts
Lighting Resources	Phoenix	AZ	(800) 572-9253	ben@voidnet.com	Lamp recycling and ballast management
MCS Environmental	Spokane	WA	(509) 924-9236	mcsspok@ez.eznet	Arrange for lamp and ballast recycling or disposal
Mercury Technologies of Minnesota	Pine City	MN	(800) 864-3821	merctech@ecenet.com	Lamp recycling and ballast management
Midwest Recycling & Recovery Services	Dubuque	IA	(800) 311-9636		Arrange for lamp and ballast recycling or disposal
NSSI Recovery Services	Houston	TX	(713) 641-0391	rdgallagher@nssihouston.com	Limited lamp and ballast disposal services
Nu-Life Industries	Aldergrove	BC	(604) 857-5588	info@nulife-ind.com	Lamp recycling and non-PCB ballast management
Onyx Environmental Services, LLC	Tukwila	WA	(206) 241-3900 or (800) 334-2387	jim_beck@wastemanagement.com	Transportation of lamps and ballasts

Name of Company	City	State	Phone	E-Mail Address	SERVICE
Philip Services	Renton	WA	(425) 227-0311 or (800) 228-7872	londamay@philip-serv.com	Transportation of lamps and ballasts
Philip Services	Washougal	WA	(800) 547-2436	londamay@philip-serv.com	Transportation of lamps and ballasts
Phoenix Environmental	Fife	WA	(253) 779-8474		Limited t\ansportation of lamps and ballasts
Prezant Associates	Seattle	WA	(206) 368-4252 or (206) 281-8858	prezant@prezant.com	Industrial hygiene, safety and health consulting
Recyclights West LLC	Glendora Las Vegas	CA NV	(626) 335-3042 (702) 633-7900	recwest@aol.com	Lamp recycling at Las Vegas facility – no ballast management
Romic Environmental	Tacoma	WA	(253) 229-6569	gregc@romic.com	Transportation of lamps and ballasts to CA facility
RTW	University Place	WA	(253) 566-5819	mthinc@foxinternet.net	Arrange for lamp and ballast recycling or disposal
Safety Kleen, Auburn	Auburn	WA	(206) 939-2022		Transportation of lamps and ballasts
Safety Kleen, Lynnwood	Lynnwood	WA	(425) 775-7030		Transportation of lamps and ballasts
Safety Kleen, Pasco	Pasco	WA	(509) 547-8771	mikekendall@safetykleen.com	Transportation of lamps and ballasts
Safety Kleen, Spokane	Spokane	WA	(509) 928-8353	DavidBlackham@safetykleen.com	Transportation of lamps and ballasts
Superior Special Services (formerly Salesco Systems)	Phoenix	AZ	(800) 368-9095	mdezelon@ssusa.com	Lamp recycling and ballast management
Van Waters & Rogers, Kent	Kent	WA	(800) 909-4897	kraen.troutman@dwr-inc.com	Arrange for lamp recycling and ballast management
Van Waters & Rogers, Spokane	Spokane	WA	(800) 909-4897	ietxp@vwr-inc.com	Arrange for lamp recycling and ballast management
WasteXpress	Portland	OR	(503) 224-3206	wastex@easystreet.com	Transportation of lamps and ballasts

Appendix G: **Inspector / Laboratory Certifications**

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Certificate of Completion

This is to certify that

Matthew R. DeDominces

has satisfactorily completed
4 hours of refresher training as an

Asbestos Building Inspector

to comply with the training requirements of
TSCA Title II / 40 CFR 763 (AHERA)

134851
Certificate Number

Instructor
EPA Provider Cert. Number: 1085

ARGUS PACIFIC
TRAINING • CONSULTING

Jan 4, 2012
Date(s) of Training
Exam Score: NA
Expiration Date: Jan 3, 2013

Argus Pacific, Inc. • 1900 W. Nickerson, Suite 315 • Seattle, Washington • 98119 • 206.285.3373 • fax 206.285.3927

STATE OF WASHINGTON

Department of Commerce

Lead-Based Paint Program

Matthew R. De Dominces

Has fulfilled the certification requirements of Washington Administrative code (WAC) 365-230 and has been certified to conduct lead-based paint activities pursuant to WAC 365-230-200 as a:

Inspector

Certification #	Issuance Date	Expiration Date
6277	12/8/2010	12/8/2013

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101631-0

Pacific Rim Environmental, Inc.

Tukwila, WA

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2012-04-01 through 2013-03-31

Effective dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

David F. Alderman

For the National Institute of Standards and Technology

National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Pacific Rim Environmental, Inc.
6510 Southcenter Boulevard
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Tukwila, WA 98188
Mr. William F. Golloway
Phone: 206-244-8965 Fax: 206-244-9096
E-Mail: fgolloway@pacrimenv.com

BULK ASBESTOS FIBER ANALYSIS (PLM) **NVLAP LAB CODE 101631-0**

NVLAP Code	*Designation / Description*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

2012-04-01 through 2013-03-31
Effective dates

David F. Alderman
For the National Institute of Standards and Technology

National Voluntary
Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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Effective dates

David F. Alderman
For the National Institute of Standards and Technology

NVLAP-01S (REV. 2005-05-19)

PACIFIC RIM ENVIRONMENTAL, INC.

Regulated Building Material Survey

Block 21 – Budget Rent a Car
2200 7th Avenue
Seattle, WA



Performed for:

GeoEngineers, Inc.
Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, WA 98101

Prepared By:

DRAFT

Todd P. Carter, AHERA Inspector
CTED Lead Risk Assessor

Date Prepared: 11/12/2012
PRE#: 14762.03

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Appendix B: Bulk Sample Analysis Report

Appendix C: Sample Location Drawings and Photos

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Appendix F: Universal Waste Rule WAC 173-303-573

Appendix G: Inspector/Laboratory Certifications

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Section 1.0 Scope of Work
Block 21 - Budget Rent a Car 7th Avenue, Seattle, WA

Pacific Rim Environmental (PacRim) performed a limited regulated building material survey for Asbestos, Lead-based Paint and Universal Waste at the commercial structure located at 2200 7th Avenue in Seattle, WA.

Site: The site is occupied by one-story, approximately 15,964 square foot commercial building constructed in 1953.

Limitations: The building was occupied at time of inspection. Inspection and sampling was limited to accessible materials using discreet sample collection procedures. Additional inspection and destructive sampling must be performed once the building is vacated as part of the project design phase.

Field inspection, data collection, and report generation were performed according to the following:

Scope of Work

Asbestos-Containing Materials (ACM)

1. Bulk sampling and analysis of suspect asbestos-containing materials (ACM).
2. Analysis of suspect ACM by a NVLAP accredited laboratory.
3. Quantity estimates of ACM.
4. Review of existing survey report
5. Written report including recommendations based on the technician's observations, sample descriptions, and sample location.
6. Statement of Compliance with W.A.C. 296-62-07721 Sign-off form.

Lead-Based Paints (LBP)

7. Perform limited screening of suspect lead-based paints using XRF.
8. Written report including: Sample descriptions, conditions, locations, analytical results, and recommendations. (**See Section 4.0 for discussion of LBP conditions**)

Universal Waste Inventory

8. Inspect and inventory lights and equipment to identify fixture and lamp type to determine presence of PCB and/or mercury.

The survey was intended to identify possible asbestos-containing materials (ACM) on the interior and exterior of the building. This inspection covered only those areas, which were exposed and/or physically accessible to the inspector. Materials uncovered during the course of demolition, renovation, or maintenance activities that are not identified in this inspection report must be presumed to contain asbestos until PLM analysis proves that this material is not asbestos-containing.

This survey is not intended for, nor should be used as a design specification. The Asbestos in Schools Hazard Amendment and Reauthorization Act (ASHARA), effective November 20, 1990, expanded accreditation requirements to apply to persons who work with asbestos in public and commercial buildings as well as schools. Specifically, ASHARA expanded the Toxic Substances Control Act (TSCA) Section 206 (a) (1) and (3) to require accreditation for any person who designs or conducts a response action with respect to friable ACM in a building. TSCA Section 207 provides for civil penalties of $5,000 for each day of a violation for not employing accredited individuals to design and conduct response actions. Sampling of suspect asbestos-containing materials was conducted as prescribed in 40 CFR 763.86.

Suspect asbestos-containing materials within the structure were identified and classified as a surfacing material, thermal system insulation, or miscellaneous materials. Surfacing materials are those, which are either spray applied or troweled-on for acoustical, decorative, or fireproofing purposes. Thermal system insulation (TSI) is insulation used to inhibit heat transfer or to prevent condensation on pipes, boilers, tanks, ducts and various other components. Miscellaneous materials include all other materials not included in the above categories such as floor tile, ceiling tile, roofing felt, cementitious materials, wallboard systems and products such as caulking, mastics and putties.

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Bulk samples collected were submitted for sample analysis in accordance with method EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk building Materials". Analyses were performed in Pacific Rim Environmental Inc.'s NVLAP Accredited Laboratory (Lab Code 101631-0). Materials are positive for asbestos if they are found to contain greater than 1% or 1% asbestos.

A total of thirty-four (34) samples were collected and submitted for PLM laboratory analysis. One (1) of these samples was found to contain greater than 1% asbestos. One (1) visual sample was noted during the inspection. The material should be treated as asbestos until sampled.

Thermal Systems Insulation (TSI)

No suspect TSI was identified during the inspection and testing. TSI may be present in locations that were inaccessible during the non-destructive inspection and sample collection.

If during the course of wall, ceiling or floor demolition, any TSI materials that are not listed in this report are uncovered, sampling ***must*** be performed or the material presumed asbestos containing prior to disturbing these materials.

Surface Materials

Suspect asbestos-containing **GWB** was identified in the hallway to the men's bathroom, storage room, manager's office, hall to rental desk, rental area, Men's bathroom, stair to garage, garage, and break room. The materials were sampled and **no asbestos was detected.** (Sample #01-05, 08, 10, 15, 16, & 18-20)

Suspect asbestos-containing **coating on cement** was identified in the rental area, north wall. The material was sampled and ***found to contain 1-3% Chrysotile Asbestos.*** (Sample #13)

If during the course of wall, ceiling or floor demolition, any surfacing materials not identified in this report are uncovered, sampling ***must*** be performed or the material presumed asbestos containing prior to disturbing these materials.

Miscellaneous Materials

Suspect asbestos-containing **12" gray speckled tile and mastic** was identified in the rental area. The material was sampled and **no asbestos was detected.** (Sample #06)

Suspect asbestos-containing **4" cove base and mastic** was identified in the rental area, hall, garage, break room. The material was sampled and **no asbestos was detected.** (Sample #07, 11, 17, 22)

Suspect asbestos-containing **sheet vinyl flooring** was identified in the men's bathroom, break room and garage. The material was sampled and **no asbestos was detected.** (Sample #09, 21, 24, 25)

Suspect asbestos-containing **12" ceiling tile and mastic** was identified in the rental area. The materials were sampled and **no asbestos was detected.** (Sample #12, 26-28)

Suspect asbestos-containing **2'x4' ceiling panels** was identified in the hall to garage. The material was sampled and **no asbestos was detected.** (Sample #14)

Suspect asbestos-containing **12" tile and mastic** was identified on garage floor. The material was sampled and **no asbestos was detected.** (Sample #23)

Suspect asbestos-containing **rolled roofing** was identified on the roof. The materials were sampled and **no asbestos was detected.** (Sample #29-31)

Suspect asbestos-containing **window putty** was identified on the exterior. The materials were sampled and **no asbestos was detected.** (Sample #32-34)

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Miscellaneous Materials - Continue

Suspect asbestos-containing **wall sealant** was identified at the parking level, east side of parapet, at bottom of wall. The material is **Presumed Asbestos Containing Material (PACM)** until sample analysis can be performed. (Sample #V-1)

If during the course of wall, ceiling or floor demolition or roof demolition, any miscellaneous materials that are not listed in this report are uncovered, sampling ***must*** be performed or the material presumed asbestos containing prior to disturbing these materials.

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Section 3.0 Statement of Compliance
Block 21 – Budget Rent a Car 7th Avenue, Seattle, WA

In accordance with W.A.C. 296-62-07721 and PSCAA Regulation III, Article 4, Pacific Rim Environmental, Inc. performed an asbestos survey of the subject structure Commercial Building located at 2200 7th Avenue in Seattle, WA.

Should employees or contract personnel encounter any suspect asbestos-containing materials (ACM) it is their responsibility to:

1. Contact a representative of the owner.
2. Consult the inspection report to determine whether or not the suspect material contains asbestos.
3. If the suspect material does not appear in the inspection report, then that material was not sampled and must be presumed to contain asbestos until proven otherwise by sampling and PLM analysis.
4. Ensure that all employees and contractors are informed and advised of the location and type of materials that contain asbestos.

The following asbestos-containing materials were identified at the subject property:

- **Coating on Cement (Rental Area, North Wall)**

The following **Presumed Asbestos Containing Materials** were identified at the subject property:

- **Wall Sealant (Parking Level)**

The inspection report has been made available to me. I will inform all subcontractors of the location and types of materials containing asbestos. I am authorized to sign on behalf of my company.

Contractor:	_____	Owner's Rep:	_____
Signature:	_____	Signature:	_____
Print Name:	_____	Print Name:	_____
Title:	_____	Title:	_____
Date:	_____	Date:	_____

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Section 4.0 Lead-Based Paint Summary
Block 21 – Budget Rent a Car 7th Avenue, Seattle, WA

Lead based paint was identified on the following painted components. The presence of lead will require the collection of a TCLP sample to characterize the waste stream for disposal.

Lead was found in the following locations:

PRE#	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
9	Concrete	Wall	South exterior of building at first east corner	Cream	Positive	1.1

See XRF Data Sheets in Appendix D for a complete listing of all samples.

The only state rules or regulations that currently apply to lead-based paints are WAC 296-155-17603 Scope* and WAC 296-155-17607 Permissible Exposure Limit**. The WAC code states that if lead is detectable in the workplace in any quantity, initial air monitoring must be performed on employees doing demolition, renovation or remodeling work in areas found to have materials containing lead. Also, workers performing lead removal must be trained in accordance with WAC 296-155-17625.

The EPA/HUD standard uses a criterion of 5,000 parts per million (PPM) dry weight or 1.0 milligrams per square centimeter (1.0 mg/cm2) for lead-based paint. However, if lead is detected in any concentration, Federal OSHA and Washington State Department of Labor and Industries regulations will still apply, since neither agency has established a concentration of lead in paint below which the lead in construction standards do not apply.

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Section 5.0 Universal Waste Inventory
Block 21 – Budget Rent a Car 7th Avenue, Seattle, WA

Universal Waste Rules

The Universal Waste Rule (UWR) establishes alternative, streamlined waste management standards in place of most of the Dangerous Waste Regulations, Chapter 173-303 WAC, except for, WAC 173-303-050, 173-303-145 and 173-303-960. The following lamp types may be characterized as universal waste: fluorescent tubes, high intensity discharge (HID) lamps (mercury vapor, metal halide, high pressure sodium) and compact fluorescent.

Universal waste will be identified during the destructive sampling phase.

If found, universal waste must be removed and properly disposed of or recycled prior to building demolition.

Disposal of individual lamps is not regulated. However disposal of large quantities of lamps is subject to dangerous waste regulations (WAC 173-303) and the waste stream must be subjected to TCLP (Toxicity Characteristic Leaching Procedure) analysis to determine the amount of mercury that could leach out of the waste. The TCLP limit for mercury is 0.2 mg/L.

PCBs belong to a broad family of organic chemicals known as chlorinated hydrocarbons. PCBs are produced by the combination of one or more chlorine atoms and a biphenyl molecule. PCBs range in consistency from heavy oily liquids to waxy solids. Prior to 1979, PCBs were widely used in electrical equipment such as transformers, capacitors, switches, and voltage regulators.

A copy of the Washington State Department of Ecology *Universal Waste Rule for Dangerous Waste Lamps WAC 173-303-573*, Publication # 00-04-020 is provided in Appendix F.

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Appendix A: **Asbestos Sample Summary**

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Pacific Rim Environmental, Inc

Asbestos Summary

Project Name / Address: Block 21 - Budget Rent-a-Car / 2200 7th Ave., Seattle, WA 98121

Project ID	Sample #	Sample Location	AHERA Category	Sample Description	Asbestos Type/%	Approximate Quant.
14762.03	01	Hall to men's bathroom, east wall	Surfacing	GWB	None Detected	N/A
14762.03	02	Storage room, north wall	Surfacing	GWB	None Detected	N/A
14762.03	03	Manager's office, north wall	Surfacing	GWB	None Detected	N/A
14762.03	04	Hall to rental desk	Surfacing	GWB	None Detected	N/A
14762.03	05	Rental area, west wall	Surfacing	GWB	None Detected (Both Layers)	N/A
14762.03	06	Rental area, floor	Miscellaneous	12" gray speckled tile and mastic	None Detected (Both Layers)	N/A
14762.03	07	Rental area, floor	Miscellaneous	4" gray cove base and mastic	None Detected (Both Layers)	N/A
14762.03	08	Men's bathroom, wall (also found in women's bathroom)	Surfacing	GWB	None Detected	N/A
14762.03	09	Men's bathroom, floor (also found in women's bathroom)	Miscellaneous	White and blue speckled SVF	None Detected (All Layers)	N/A
14762.03	10	Stair texture on plaster garage, south wall	Surfacing	GWB	None Detected (Both Layers)	N/A
14762.03	11	Hall to men's bathroom	Miscellaneous	4" brown cove base and mastic	None Detected (Both Layers)	N/A
14762.03	12	Rental area, ceiling	Miscellaneous	12" ceiling tile (no mastic)	None Detected	N/A

Project ID	Sample #	Sample Location	AHERA Category	Sample Description	Asbestos Type/%	Approximate Quant.
14762.03	13	Rental area, north wall	Surfacing	Coating on cement	Chrysotile 1-3%	300 Sq. Ft.
14762.03	14	Hall to garage stairway, ceiling	Miscellaneous	2'x4' ceiling panels	None Detected	N/A
14762.03	15	Stairway to top floor, south wall	Surfacing	GWB	None Detected	N/A
14762.03	16	Garage, west wall	Surfacing	GWB	None Detected (Both Layers)	N/A
14762.03	17	Garage, north side	Miscellaneous	4" brown cove base and mastic	None Detected (Both Layers)	N/A
14762.03	18	Southeast corner by lift, west wall	Surfacing	GWB	None Detected	N/A
14762.03	19	Southeast corner at stairs, east wall	Surfacing	GWB	None Detected	N/A
14762.03	20	Break room (also found in men's and women's bathrooms)	Surfacing	GWB	None Detected	N/A
14762.03	21	Break room (also found in men's and women's bathrooms)	Miscellaneous	SVF and mastic	None Detected (Both Layers)	N/A
14762.03	22	Break room (also found in men's and women's bathrooms)	Miscellaneous	4" cove base	None Detected (Both Layers)	N/A
14762.03	23	Southwest corner of garage, floor	Miscellaneous	12" tile and mastic	None Detected (Both Layers)	N/A
14762.03	24	Center of west end, floor	Miscellaneous	SVF and mastic	None Detected (All Layers)	N/A
14762.03	25	East floor (also found in center of west end)	Miscellaneous	SVF and mastic	None Detected (Both Layers)	N/A
14762.03	26	Northwest ceiling, south	Miscellaneous	12" ceiling tile and mastic	None Detected (Both Layers)	N/A

Project ID	Sample #	Sample Location	AHERA Category	Sample Description	Asbestos Type/%	Approximate Quant.
14762.03	27	Northwest ceiling, center	Miscellaneous	12" ceiling tile and mastic	None Detected (Both Layers)	N/A
14762.03	28	Northwest ceiling, west	Miscellaneous	12" ceiling tile and mastic	None Detected (Both Layers)	N/A
14762.03	29	Northwest corner of roof	Miscellaneous	Rolled roofing and tar	None Detected (Both Layers)	N/A
14762.03	30	Northeast corner of roof	Miscellaneous	Rolled roofing and tar	None Detected (Both Layers)	N/A
14762.03	31	Center roof	Miscellaneous	Rolled roofing and tar	None Detected (All Layers)	N/A
14762.03	32	North exterior	Miscellaneous	Window putty	None Detected	N/A
14762.03	33	East wall exterior	Miscellaneous	Window putty	None Detected (Both Layers)	N/A
14762.03	34	East wall exterior	Miscellaneous	Window putty	None Detected	N/A
14762.03	V-1	At parking level, east side of parapet at bottom of wall	Miscellaneous	Wall sealant	PACM	

Appendix B: **Bulk Sample Analysis Report**

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PACIFIC RIM ENVIRONMENTAL, INC.

BULK SAMPLE ANALYSIS REPORT

CLIENT:	**Geoengineers**	**PACRIM # :**	**14762.03**
	8410 154th Avenue NE	**REPORT # :**	2012-10-0175
	Redmond, WA 98052	**DATE RECEIVED :**	10/05/2012-10/8/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 - Budget Rent-a-Car	**DATE ANALYZED :**	10/19/2012, 10/22/2012
	2200 7th Avenue	**REPORT BY :**	Sarah Kreiner
	Seattle, WA 98121	**REPORT DATE :**	10/22/2012
		TURNAROUND:	5 Days
SAMPLE DATE:	10/05/2012, 10/08/2012	**PAGE :**	1 of 9

Attached are the results of analysis of 34 bulk samples submitted for asbestos identification: lab ID #2012-010-0175 through 2012-10-0206 and 2012-10-0234 through 2012-10-0235.

Samples were analyzed in accordance with method EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk Building Materials".

Unless otherwise noted, samples were inhomogeneous; subsamples of components were analyzed to achieve representative analysis. Separate layers of layered samples are analyzed and reported separately. Unless otherwise stated, asbestos content was quantified by calibrated visual estimation (CVES). CVES concentrations are reported in 2 to 3 percent ranges for fiber concentrations ranging from 1-10%, and 5 percent ranges for concentrations greater than 10%. Samples in which asbestos was not observed are reported as "none detected".

Limitations and Uncertainty:

Factors such as sample quality, sample size, interfering matrix material, fiber size, and fiber concentration contribute to the uncertainty of asbestos concentration measurements in bulk materials. Relative errors exceeding 100% may occur in samples containing <1-10% asbestos. Relative errors are typically below 30% in samples with greater than 10% asbestos, and approach zero as the asbestos concentration approaches 100%.

Asbestos fibers with diameters below approximately 0.25 micrometers are not detectable by PLM. These extremely fine fibers may occur in such products as floor tile, adhesives, and cement products. This limitation can be overcome, however, by the use of alternate analytical methods, such as Transmission Electron Microscopy (TEM).

This report cannot be represented by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. Test results pertain only to the samples submitted for analysis.

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NVLAP Accredited LAB #: 101631-0
Samples submitted by: PRE

Reports Reviewed By: *Approved Signatory*

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	Geoengineers 8410 154th Avenue NE Redmond, WA 98052	PACRIM # :	14762.03
		REPORT # :	2012-10-0175
		DATE RECEIVED :	10/05/2012-10/8/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 - Budget Rent-a-Car 2200 7th Avenue Seattle, WA 98121	DATE ANALYZED :	10/19/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/22/2012
		TURNAROUND:	5 Days
SAMPLE DATE:	10/05/2012, 10/08/2012	PAGE :	2 of 9

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
1 2012-10-0175	**Hall to man's bathroom, east wall (GWB).** White, chalky drywall with white-painted, brown paper.	None detected	Cellulose (3-5%), Fiberglass (1-3%), Gypsum, Mineral Aggregate, Binder, Paint.	10/19/12
2 2012-10-0176	**Storage room, north wall (GWB).** White, chalky drywall with white-painted, brown paper.	None detected	Cellulose (5-7%), Fiberglass (1-3%), Gypsum, Mineral Aggregate, Binder, Paint.	10/19/12
3 2012-10-0177	**Manager's office, north wall (GWB).** White, chalky drywall with white-painted, brown paper.	None detected	Cellulose (7-10%), Fiberglass (1-3%), Gypsum, Mineral Aggregate, Binder, Paint.	10/19/12
4 2012-10-0178	**Hall to rental desk (GWB).** White, chalky drywall with white-painted, brown paper.	None detected	Cellulose (10-15%), Fiberglass (1-3%), Gypsum, Mineral Aggregate, Binder, Paint.	10/19/12
5 2012-10-0179	**Rental area, west wall (GWB).** White-painted, white, chalky mud (layer 1) on white, chalky drywall with brown paper.	**Layer 1** (Mud): None detected **Layer 2** (Drywall): None detected	**Layer 1:** Cellulose (<1%), Binder, Mineral Aggregate, Paint. **Layer 2:** Cellulose (15-20%), Fiberglass (<1%), Gypsum, Mineral Aggregate, Binder.	10/19/12

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	**Geoengineers** 8410 154th Avenue NE Redmond, WA 98052	PACRIM # :	**14762.03**
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		DATE RECEIVED :	10/05/2012-10/8/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 - Budget Rent-a-Car 2200 7th Avenue Seattle, WA 98121	DATE ANALYZED :	10/19/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/22/2012
		TURNAROUND:	5 Days
SAMPLE DATE:	10/05/2012, 10/08/2012	PAGE :	3 of 9

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
6 2012-10-0180	**Rental area, floor (12" gray speckled tile and mastic).** Light grey floor tile with white and grey streaks and splotches (layer 1) with light yellow mastic (layer 2).	**Layer 1** (Tile): None detected **Layer 2** (Drywall): None detected	**Layer 1:** Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/19/12
7 2012-10-0181	**Rental area, floor (4" gray cove base and mastic).** Brown flexible cove base (layer 1) with light brown mastic (layer 2).	**Layer 1** (Cove base): None detected **Layer 2** (Mastic): None detected	**Layer 1:** Vinyl, Mineral Aggregate. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/19/12
8 2012-10-0182	**Men's bathroom, wall (GWB).** Light brown, chalky drywall with white-painted, brown, and green paper.	None detected	Cellulose (40-45%), Fiberglass (<1%), Gypsum, Mineral Aggregate, Binder, Paint.	10/19/12
9 2012-10-0183	**Men's bathroom, floor (White and blue speckled SVF).** Light grey and white sheet vinyl (layer 1) with light grey, fibrous backing (layer 2) with white mastic (layer 3).	**Layer 1** (Vinyl): None detected **Layer 2** (Backing): None detected **Layer 3** (Mastic): None detected	**Layer 1:** Vinyl, Mineral Aggregate. **Layer 2:** Cellulose (30-35%), Fiberglass (3-5%), Synthetics, Diatomaceous Earth. **Layer 3:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/19/12

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	**Geoengineers** 8410 154th Avenue NE Redmond, WA 98052	**PACRIM # :**	**14762.03**
		REPORT # :	2012-10-0175
		DATE RECEIVED :	10/05/2012-10/8/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 - Budget Rent-a-Car 2200 7th Avenue Seattle, WA 98121	**DATE ANALYZED :**	10/19/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/22/2012
		TURNAROUND:	5 Days
SAMPLE DATE:	10/05/2012, 10/08/2012	**PAGE :**	4 of 9

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
10 2012-10-0184	**Stair to garage, south wall (GWB).** White-painted, white, chalky mud with white paper (layer 1) on white, chalky drywall with brown paper (layer 2).	**Layer 1** (Mud with paper): None detected **Layer 2** (Drywall): None detected	**Layer 1:** Cellulose (20-25%), Binder, Mineral Aggregate, Paint. **Layer 2:** Cellulose (15-20%), Gypsum, Mineral Aggregate, Binder.	10/19/12
11 2012-10-0185	**Hall to men's bathroom (4" brown cove base and mastic).** Brown, flexible cove base (layer 1) with white mastic (layer 2).	**Layer 1** (Cove base): None detected **Layer 2** (Mastic): None detected	**Layer 1:** Vinyl, Mineral Aggregate. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/19/12
12 2012-10-0186	**Rental area, ceiling (12" ceiling tile (no mastic)).** Black-painted, brown, fibrous ceiling tile material.	None detected	Cellulose (85-90%), Binder, Paint.	10/19/12
13 2012-10-0187	**Rental area, north wall (Coating on cement).** Black-painted, light brown, chalky mud-like material.	**Chrysotile 1-3%**	Cellulose (<1%), Binder, Mineral Aggregate, Paint.	10/19/12

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		ANALYST :	William F. Golloway
PROJECT:	Block 21 - Budget Rent-a-Car 2200 7th Avenue Seattle, WA 98121	**DATE ANALYZED :**	10/19/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/22/2012
		TURNAROUND:	5 Days
SAMPLE DATE:	10/05/2012, 10/08/2012	**PAGE :**	5 of 9

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
14 2012-10-0188	**Hall to garage stairway, ceiling (2'x4' ceiling panels).** White-painted, light grey, fibrous ceiling tile material.	None detected	Cellulose (45-50%), Fiberglass (20-25%), Perlite, Binder, Paint.	10/19/12
15 2012-10-0189	**Stairway to top floor, south wall (GWB).** White, chalky drywall with white-painted, brown paper.	None detected	Cellulose (1-3%), Fiberglass (1-3%), Gypsum, Mineral Aggregate, Binder.	10/19/12
16 2012-10-0190	**Garage, west wall (GWB).** White-painted, white, chalky mud (layer 1) on white, chalky drywall with brown paper (layer 2).	**Layer 1** (Mud): None detected **Layer 2** (Drywall): None detected	**Layer 1:** Cellulose (<1%), Binder, Mineral Aggregate, Paint. **Layer 2:** Cellulose (30-35%), Fiberglass (<1%), Gypsum, Mineral Aggregate, Binder.	10/19/12
17 2012-10-0191	**Garage, north side (4" brown cove base and mastic).** Grey, flexible cove base (layer 1) with white mastic (layer 2).	**Layer 1** (Cove base): None detected **Layer 2** (Mastic): None detected	**Layer 1:** Vinyl, Mineral Aggregate. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/19/12
18 2012-10-0192	**Southeast corner by lift, west wall (GWB).** White, chalky drywall with white-painted, brown paper.	None detected	Cellulose (30-35%), Fiberglass (<1%), Gypsum, Mineral Aggregate, Binder, Paint.	10/19/12

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BULK SAMPLE ANALYSIS REPORT

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PROJECT:	Block 21 - Budget Rent-a-Car 2200 7th Avenue Seattle, WA 98121	**DATE ANALYZED :**	10/19/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/22/2012
		TURNAROUND:	5 Days
SAMPLE DATE:	10/05/2012, 10/08/2012	**PAGE :**	6 of 9

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
19 2012-10-0193	**Southeast corner at stairs, east wall (GWB).** White, chalky drywall with light grey-white-painted, brown paper.	None detected	Cellulose (7-10%), Fiberglass (<1%), Gypsum, Mineral Aggregate, Binder, Paint.	10/19/12
20 2012-10-0194	**Break room (GWB).** White, chalky drywall with white-painted, brown paper.	None detected	Cellulose (30-35%), Fiberglass (<1%), Gypsum, Mineral Aggregate, Binder, Paint.	10/19/12
21 2012-10-0195	**Break room (SVF and mastic).** Light grey sheet vinyl with blue and green splotches (layer 1) and light grey, fibrous backing with light yellow mastic (layer 2). **Note:** Mastic and backing were inseparable.	**Layer 1** (Vinyl): None detected **Layer 2** (Backing): None detected	**Layer 1:** Vinyl, Mineral Aggregate. **Layer 2:** Cellulose (30-35%), Synthetics (1-3%), Fiberglass (1-3%), Diatomaceous Earth, Adhesive, Mineral Aggregate.	10/19/12
22 2012-10-0196	**Break room (4" cove base).** Grey, flexible cove base (layer 1) with white mastic (layer 2).	**Layer 1** (Cove base): None detected **Layer 2** (Mastic): None detected	**Layer 1:** Vinyl, Mineral Aggregate. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/19/12

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

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		REPORT # :	2012-10-0175
		DATE RECEIVED :	10/05/2012-10/8/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 - Budget Rent-a-Car 2200 7th Avenue Seattle, WA 98121	**DATE ANALYZED :**	10/19/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/22/2012
		TURNAROUND:	5 Days
SAMPLE DATE:	10/05/2012, 10/08/2012	**PAGE :**	7 of 9

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
23 2012-10-0197	**Southwest corner of garage, floor (12" tile and mastic).** White floor tile (layer 1) with yellow mastic (layer 2).	**Layer 1** (Tile): None detected **Layer 2** (Mastic): None detected	**Layer 1:** Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/19/12
24 2012-10-0198	**Center west, floor (SVF and mastic).** White sheet vinyl with green and grey splotches (layer 1), light grey, fibrous backing (layer 2) with white mastic (layer 3).	**Layer 1** (Vinyl): None detected **Layer 2** (Backing): None detected **Layer 3** (Mastic): None detected	**Layer 1:** Vinyl, Mineral Aggregate. **Layer 2:** Cellulose (35-40%), Synthetics (1-3%), Fiberglass (1-3%), Diatomaceous Earth. **Layer 3:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/19/12
25 2012-10-0199	**East floor (also found in center of west end) (SVF and mastic).** White, green, and pink vinyl flooring (layer 1) with white mastic and grey leveling compound residue (layer 2).	**Layer 1** (Flooring): None detected **Layer 2** (Mastic with leveling compound): None detected	**Layer 1:** Vinyl, Mineral Aggregate. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate, Binder.	10/19/12
26 2012-10-0200	**Northwest ceiling, south (12" ceiling tile and mastic).** White-painted, brown, fibrous ceiling tile (layer 1) with brown, brittle mastic (layer 2).	**Layer 1** (Ceiling tile): None detected **Layer 2** (Mastic): None detected	**Layer 1:** Cellulose (85-90%), Binder, Paint. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/19/12

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

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		ANALYST :	William F. Golloway
PROJECT:	Block 21 - Budget Rent-a-Car 2200 7th Avenue Seattle, WA 98121	**DATE ANALYZED :**	10/19/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/22/2012
		TURNAROUND:	5 Days
SAMPLE DATE:	10/05/2012, 10/08/2012	**PAGE :**	8 of 9

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
27 2012-10-0201	**Northwest ceiling, center (12" ceiling tile and mastic).** White-painted, brown, fibrous ceiling tile (layer 1) with brown, brittle mastic (layer 2).	**Layer 1** (Ceiling tile): None detected **Layer 2** (Mastic): None detected	**Layer 1:** Cellulose (85-90%), Binder, Paint. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/19/12
28 2012-10-0202	**Northwest ceiling, west (12" ceiling tile and mastic).** White-painted, brown, fibrous ceiling tile (layer 1) with brown, brittle mastic (layer 2).	**Layer 1** (Ceiling tile): None detected **Layer 2** (Mastic): None detected	**Layer 1:** Cellulose (85-90%), Binder, Paint. **Layer 2:** Cellulose (<1%), Adhesive, Mineral Aggregate.	10/19/12
29 2012-10-0203	**Northwest corner of roof (Rolled roofing and tar).** Black tar roofing material with white gravel (layer 1) and tar mastic (layer 2).	**Layer 1** (Roofing): None detected **Layer 2** (Tar): None detected	**Layer 1:** Cellulose (<1%), Synthetics (7-10%), Tar, Binder, Mineral Aggregate. **Layer 2:** Cellulose (<1%), Tar, Mineral Aggregate.	10/19/12
30 2012-10-0204	**Northeast corner of roof (Rolled roofing and tar).** Black, tar roofing with white gravel (layer 1) and black tar roofing with white gravel (layer 2).	**Layer 1** (Roofing): None detected **Layer 2** (Roofing): None detected	**Layer 1:** Cellulose (<1%), Synthetics (10-15%), Mineral Aggregate, Tar, Binder. **Layer 2:** Cellulose (<1%), Synthetics (10-15%), Mineral Aggregate, Tar, Binder.	10/19/12

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

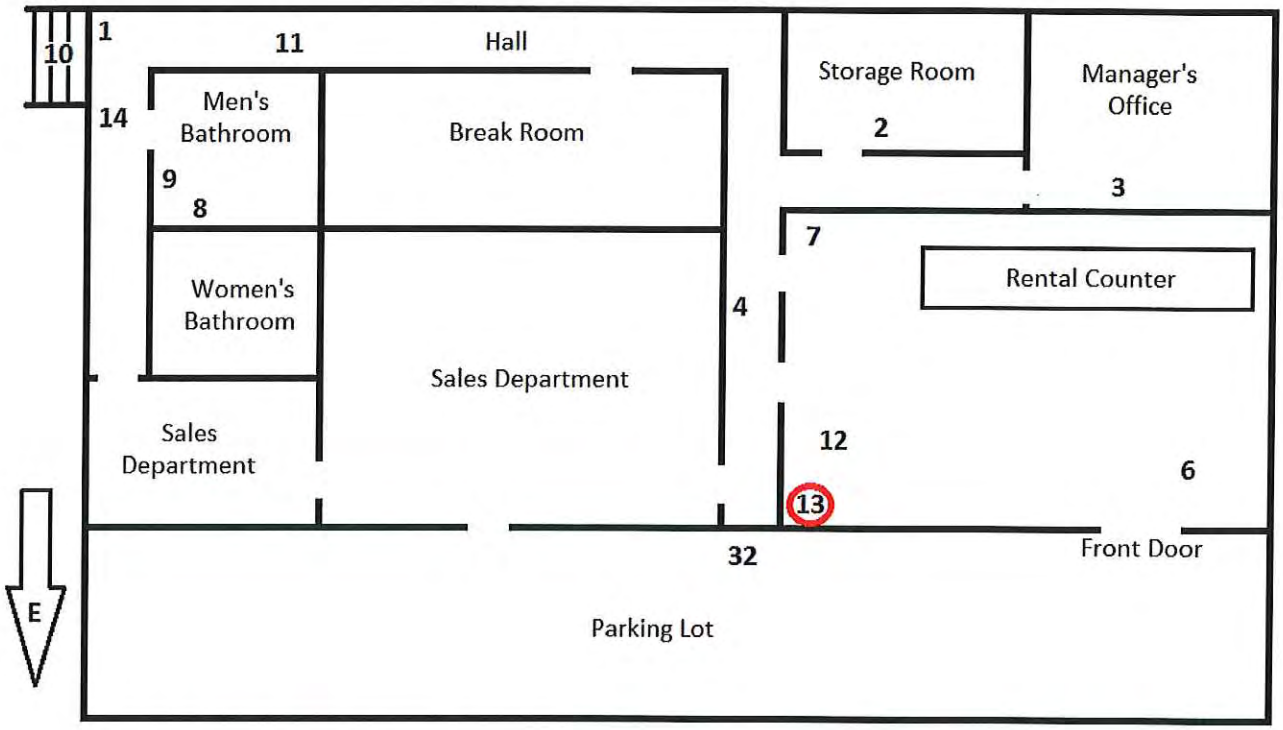
CLIENT:	**Geoengineers** 8410 154th Avenue NE Redmond, WA 98052	**PACRIM # :**	**14762.03**
		REPORT # :	2012-10-0175
		DATE RECEIVED :	10/05/2012-10/8/2012
		ANALYST :	William F. Golloway
PROJECT:	Block 21 - Budget Rent-a-Car 2200 7th Avenue Seattle, WA 98121	**DATE ANALYZED :**	10/19/2012
		REPORT BY :	Sarah Kreiner
		REPORT DATE :	10/22/2012
		TURNAROUND:	5 Days
SAMPLE DATE:	10/05/2012, 10/08/2012	**PAGE :**	9 of 9

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
31 2012-10-0205	**Center roof (Rolled roofing and tar).** Black tar material with white gravel (layer 1) and black tar roofing material with white gravel (layer 2 and layer 3).	**Layer 1** (Tar): None detected **Layer 2** (Roofing): None detected **Layer 3** (Roofing): None detected	**Layer 1:** Cellulose (<1%), Mineral Aggregate, Tar, Binder. **Layer 2:** Cellulose (<1%), Synthetics (10-15%), Mineral Aggregate, Tar, Binder. **Layer 3:** Cellulose (<1%), Synthetics (10-15%), Mineral Aggregate, Tar, Binder.	10/19/12
32 2012-10-0206	**North exterior (Window putty).** White-painted, light grey, soft window putty.	None detected	Cellulose (<1%), Binder, Mineral Aggregate, Paint.	10/19/12
33 2012-10-0234	**Exit east wall (Window putty).** White-painted, light grey window putty (layer 1) and white-painted, white, flexible window putty (layer 2).	**Layer 1** (Putty): None detected **Layer 2** (Putty): None detected	**Layer 1:** Cellulose (<1%), Binder, Mineral Aggregate, Paint. **Layer 2:** Binder, Mineral Aggregate, Paint.	10/22/12
34 2012-10-0235	**Exit east wall (Window putty).** White-painted, light pinkish-grey, brittle window putty.	None detected	Cellulose (<1%), Binder, Mineral Aggregate, Paint.	10/22/12

Appendix C: **Sample Location Drawings and Photos**

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Lobby Floor

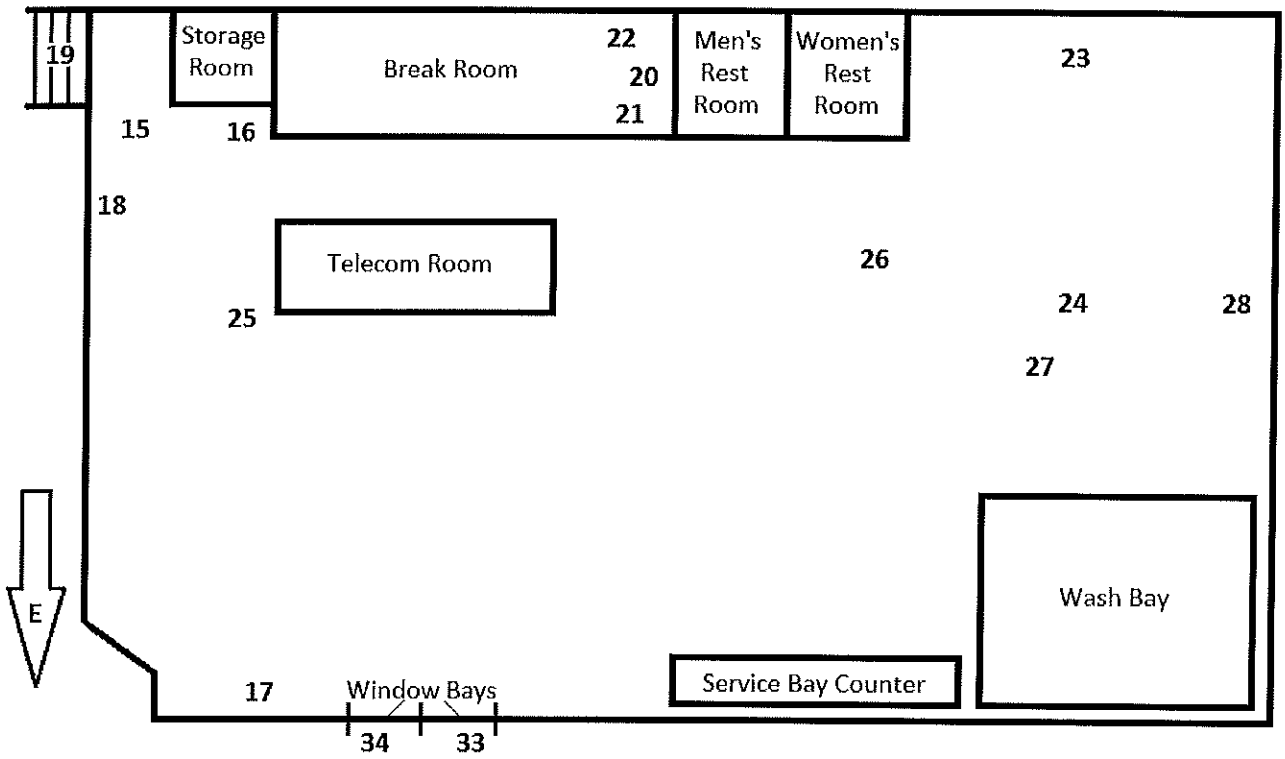


Positive samples circled in red on drawing and bold in table below.

Sample #	Sample Location	Sample Description
01	Hall to man's bathroom, east wall	GWB
02	Storage room, north wall	GWB
03	Manager's office, north wall	GWB
04	Hall to rental desk	GWB
05	Rental area, west wall	GWB
06	Rental area, floor	12" gray speckled tile and mastic
07	Rental area, floor	4" gray cove base and mastic
08	Men's bathroom, wall (also found in women's bathroom)	GWB
09	Men's bathroom, floor (also found in women's bathroom)	White and blue speckled SVF
10	Staor texture on plaster garage, south wall	GWB
11	Hall to men's bathroom	4" brown cove base and mastic
12	Rental area, ceiling	12" ceiling tile (no mastic)
13	**Rental area, north wall**	**Coating on cement**
14	Hall to garage stairway, ceiling	2'x4' ceiling panels
32	North exterior	Window putty

GeoEngineers Budget Rent-a-Car 2200 7th Ave. Seattle, WA 98121	***Pacific Rim Environmental, Inc.*** 6510 Southcenter Boulevard, #4 Tukwila, WA 98188 Tel. (206) 244-8965 FAX (206) 244-9096	Project #: 14762.03 Drawing #: 01 of 03 Sampling Dates: 10/05/12 & 10/08/12 Drawing By: Robin Sandstrom Drawing Not To Scale

Garage Floor



Positive samples circled in red on drawing and bold in table below.

Sample #	Sample Location	Sample Description
15	Stairway to top floor, south wall	GWB
16	Garage, west wall	GWB
17	Garage, north side	4" brown cove base and mastic
18	Southeast corner by lift, west wall	GWB
19	Southeast corner at stairs, east wall	GWB
20	Break room (also found in men's and women's bathrooms)	GWB
21	Break room (also found in men's and women's bathrooms)	SVF and mastic
22	Break room (also found in men's and women's bathrooms)	4" cove base
23	Southwest corner of garage, floor	12" tile and mastic
24	Center of west end, floor	SVF and mastic
25	East floor (also found in center of west end)	SVF and mastic
26	Northwest ceiling, south	12" ceiling tile and mastic
27	Northwest ceiling, center	12" ceiling tile and mastic
28	Northwest ceiling, west	12" ceiling tile and mastic
33	East wall exterior	Window putty
34	East wall exterior	Window putty

GeoEngineers

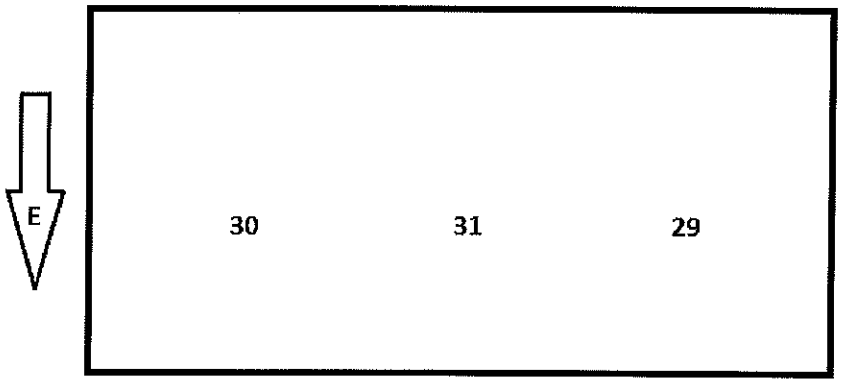
Budget Rent-a-Car
2200 7th Ave.
Seattle, WA 98121

Pacific Rim Environmental, Inc.
6510 Southcenter Boulevard, #4
Tukwila, WA 98188

Tel. (206) 244-8965 FAX (206) 244-9096

Project #: 14762.03
Drawing #: 02 of 03
Sampling Dates: 10/05/12 & 10/08/12
Drawing By: Robin Sandstrom
Drawing Not To Scale

Roof



Positive samples circled in red on drawing and bold in table below.

Sample #	Sample Location	Sample Description
29	Northwest corner of roof	Rolled roofing and tar
30	Northeast corner of roof	Rolled roofing and tar
31	Center roof	Rolled roofing and tar

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Tukwila, WA 98188

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Project #: 14762.03
Drawing #: 03 of 03
Sampling
Dates: 10/05/12 & 10/08/12
Drawing By: Robin Sandstrom
Drawing Not To Scale



Photo 1: Rental area, north wall, coating on cement (Sample # 13)

Appendix D: **XRF Data Sheets**

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Client:	**GeoEngineers, Inc** 600 Stewart St., Ste. 1700 Seattle, WA 98101	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP300-80662** **8-Oct-2012** **Matt DeDominces**
Project:	**Budget Rental** 2200 7th Ave. Seattle, WA 98121	*PRE Job#:*	**14762.03**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
1	569	*First calibration check*				Positive	1.1
2	570	*First calibration check*				Positive	1.1
3	571	*First calibration check*				Positive	1.1
4	572	Concrete	Exterior wall	North exterior wall	Gray	Negative	0.5
5	573	Metal	Roof overhang facia	North exterior	Blue	Negative	0
6	574	Concrete	Lower wall	West exterior of building	Gray	Negative	0.01
7	575	Metal	Window frame	West exterior of building	Brown	Negative	0.01
8	576	Concrete	Wall	South exterior of building, center	Gray	Negative	0
9	577	Concrete	Wall	South exterior of building at first east corner	Cream	Positive	1.1
10	578	Concrete	Wall	South exterior of building at second east corner	Cream	Negative	0
11	579	Concrete	Wall	West exterior of building	Gray	Negative	0
12	580	Testing gun error detected, needed to recalibrate					
13	581	*Second calibration check*				Negative	0.9
14	582	*Second calibration check*				Positive	1.1
15	583	*Second calibration check*				Positive	1.4
16	584	Metal	Window frame	West exterior of building	Gray	Negative	0.3
17	585	Metal	Window bars	West exterior of building	Gray	Negative	0
18	586	Concrete	Wall	West exterior of building at 45° angle	Gray	Negative	0.3
19	587	Metal	Bumper posts	West exterior of building at 45° angle	Gray	Negative	0
20	588	Metal	Stair rail	West exterior of building at 45° angle	Gray	Negative	0.29
21	589	Concrete	Half wall	North parking area	Gray	Negative	0
22	590	Metal	Half wall cap	North parking area	Blue	Negative	0.4
23	591	Metal	Budget signpost	North parking area	Blue	Negative	0.27

Client:	**GeoEngineers, Inc** 600 Stewart St., Ste. 1700 Seattle, WA 98101	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP300-80662** **8-Oct-2012** **Matt DeDominces**
Project:	**Budget Rental** 2200 7th Ave. Seattle, WA 98121	*PRE Job#:*	**14762.03**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
24	592	Drywall	Wall	Showroom, north wall	White	Negative	0.03
25	593	Drywall	Wall	Hall to bathroom	White	Negative	0
26	594	Drywall	Wall	Manager's office	White	Negative	0
27	595	Drywall	Wall	Break room	White	Negative	0
28	596	Drywall	Wall	Men's bathroom, exterior wall	White	Negative	0
29	597	Drywall	Wall	Stairwell, east wall	White	Negative	0
30	598	Metal	Door	Stairwell, south wall	White	Negative	0.4
31	599	Drywall	Wall	Garage, south wall	White	Negative	0
32	600	Drywall	Wall	Garage, west wall	White	Negative	0.01
33	601	Concrete	Wall	Garage, west wall	White	Negative	0
34	602	Concrete	Building column	Garage, west wall	White	Negative	0.13
35	603	Concrete	Wall	Garage, north wall	White	Negative	0
36	604	Concrete	Floor	Garage, northwest corner, floor	Blue	Negative	0.01
37	605	Concrete	Building column	Garage, center column	White	Negative	0.02
38	606	Concrete	Wall	Garage, east wall	White	Negative	0.01
39	607	Concrete	Ceiling	Garage, southwest corner	White	Negative	0.01
40	608	Concrete	Ceiling	Garage, southwest corner	Black	Negative	0
41	609	Concrete	Ceiling	Garage, southwest corner	Yellow	Negative	0.02
42	610	Concrete	Ceiling	Garage, southwest corner	Cream	Negative	0.17
43	611	*Last calibration check*				Negative	0.9
44	612	*Last calibration check*				Positive	1.1
45	613	*Last calibration check*				Positive	1

Report by: Robin Sandstrom
Date: 10/09/12

Appendix E: **XRF Performance Characteristic Sheet**

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Performance Characteristic Sheet

EFFECTIVE DATE: **September 24, 2004** **EDITION NO.: 1**

MANUFACTURER AND MODEL:

Make: *Niton LLC*
Tested Model: *XLp 300*
Source: ^{109}Cd
Note: This PCS is also applicable to the equivalent model variations indicated below, for the Lead-in-Paint K+L variable reading time mode, in the XLi and XLp series:

XLi 300A, XLi 301A, XLi 302A and XLi 303A.
XLp 300A, XLp 301A, XLp 302A and XLp 303A.
XLi 700A, XLi 701A, XLi 702A and XLi 703A.
XLp 700A, XLp 701A, XLp 702A, and XLp 703A.

Note: The XLi and XLp versions refer to the shape of the handle part of the instrument. The differences in the model numbers reflect other modes available, in addition to Lead-in-Paint modes. The manufacturer states that specifications for these instruments are identical for the source, detector, and detector electronics relative to the Lead-in-Paint mode.

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Lead-in-Paint K+L variable reading time mode.

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm^2 (inclusive)

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm^2 in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm^2 film).

If readings are outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instruments into control before XRF testing proceeds.

SUBSTRATE CORRECTION:

For XRF results using Lead-in-Paint K+L variable reading time mode, substrate correction is <u>not</u> needed for:

Brick, Concrete, Drywall, Metal, Plaster, and Wood

INCONCLUSIVE RANGE OR THRESHOLD:

K+L MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm^2)
Results not corrected for substrate bias on any substrate	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	1.0
	Plaster	1.0
	Wood	1.0

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated from the EPA/HUD evaluation using archived building components. Testing was conducted in August 2004 on 133 testing combinations. The instruments that were used to perform the testing had new sources; one instrument's was installed in November 2003 with 40 mCi initial strength, and the other's was installed June 2004 with 40 mCi initial strength.

OPERATING PARAMETERS:

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Substrate correction is not needed for brick, concrete, drywall, metal, plaster or wood when using Lead-in-Paint K+L variable reading time mode, the normal operating mode for these instruments. If substrate correction is desired, refer to Chapter 7 of the HUD Guidelines for guidance on correcting XRF results for substrate bias.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing. Use the K+L variable time mode readings.

Conduct XRF retesting at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below.

Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family housing a result is defined as the average of three readings. In multifamily housing, a result is a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF results.

Compute the average of all ten re-test XRF results.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

For the Lead-in-Paint K+L variable reading time mode, the instrument continues to read until it is moved away from the testing surface, terminated by the user, or the instrument software indicates the reading is complete. The following table provides testing time information for this testing mode. The times have been adjusted for source decay, normalized to the initial source strengths as noted above. Source strength and type of substrate will affect actual testing times. At the time of testing, the instruments had source strengths of 26.6 and 36.6 mCi.

Testing Times Using K+L Reading Mode (Seconds)						
	All Data			Median for laboratory-measured lead levels (mg/cm^2)		
Substrate	25^{th} Percentile	Median	75^{th} Percentile	Pb < 0.25	0.25 ≤ Pb<1.0	1.0 ≤ Pb
Wood Drywall	4	11	19	11	15	11
Metal	4	12	18	9	12	14
Brick Concrete Plaster	8	16	22	15	18	16

CLASSIFICATION RESULTS:

XRF results are classified as positive if they are greater than or equal to the threshold, and negative if they are less than the threshold.

DOCUMENTATION:

A document titled *Methodology for XRF Performance Characteristic Sheets* provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. For a copy of this document call the National Lead Information Center Clearinghouse at 1-800-424-LEAD.

This XRF Performance Characteristic Sheet was developed by the Midwest Research Institute (MRI) and QuanTech, Inc., under a contract between MRI and the XRF manufacturer. HUD has determined that the information provided here is acceptable when used as guidance in conjunction with Chapter 7, Lead-Based Paint Inspection, of HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.*

Appendix F: **Universal Waste Rule WAC 173-303-573**

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

Focus

Universal Waste Rule for Dangerous Waste Lamps WAC 173-303-573

Background

The Universal Waste Rule (UWR) establishes alternative, streamlined waste management standards in place of most of the Dangerous Waste Regulations, Chapter 173-303 WAC, except for, WAC 173-303-050, 173-303-145 and 173-303-960. Universal wastes are certain dangerous wastes that are frequently generated, and that are able to be managed appropriately under less stringent regulatory requirements. The Universal Waste Rule for batteries and mercury-containing thermostats has been in place in Washington State since 1998. For more information on the original UWR, refer to Ecology publication number 98-407 (Revised).

In June 2000, Ecology added lamps that are dangerous waste to the UWR. This rule replaces the "Interim Policy on Waste Management of Spent Fluorescent Light Tubes," dated January 30, 1995.

Universal Waste Categories of Lamps

The types of lamps that may be universal waste include:

- Fluorescent tubes
- High density (HID) lamps (mercury vapor, metal halide, high pressure sodium)
- Compact fluorescent
- Neon lamps[1]
- Any other lamps that are dangerous waste

[1] *"Neon" lamp manufacturers do not always use the inert gas neon, some are manufactured using mercury and phosphor powder.*

June 2000

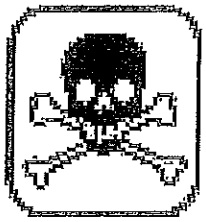
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Why Do We Care About Lamps?

Nationally, about 600 million lamps are disposed of annually, most to solid waste disposal facilities, including landfills and solid waste incinerators. In fluorescent lamps, mercury is the main concern and is present in lamps primarily in vapor form.

- The average mercury content in a fluorescent tube manufactured in 1999 is approximately 12 milligrams.
- Pre-1999 manufactured fluorescent tubes can have from 15 to 50 milligrams.
- High intensity discharge lamps may contain up to 250 milligrams, depending on the lamp wattage.

During solid waste handling and disposal many lamps break releasing mercury vapor and potentially exposing solid waste handlers to inhalation of those vapors. Solid waste incineration of mercury containing lamps also releases the mercury into the atmosphere. Mercury in the atmosphere is eventually deposited back to the earth.



Health & Environmental Hazards of Mercury

- Health risk from inhalation or absorption
- Causes neurological disorders
- Persistent, bioaccumulative and toxic
- Major cause of contaminated fish advisories

Some lamps may also contain lead in the glass and lead solder used in the lamp base. Lead is a toxic metal that may leach from solid waste landfills into the ground water. Manufacturers are eliminating the lead by using nonleaded glass and solders in newer lamps.

How to Know if a Lamp is Dangerous Waste

Lamps are known to designate as dangerous waste because of their mercury and/or lead content. Lamps may be assumed to be dangerous waste, they may be "book designated" using manufacturers' information, or they may be designated through sampling and testing.

Certain "green" lamps are available that contain less mercury and do not designate as dangerous waste. Ask your lamp manufacturer for data sheets to use when making waste determinations for these lamps. Check with your local health department, solid waste agency, or landfill for recycling or disposal options.

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Should Fluorescent Lamps Still be Used?

YES! Fluorescent tubes use one-quarter of the energy used by incandescent lamps for the same amount of light and last as much as ten times longer than incandescent bulbs. Compact fluorescent lamps last far longer than conventional tubes. The lamps used for lighting streets, playfields, and parking lots should also be selected for energy conservation. Energy conservation reduces mercury emissions from fossil fuel burning power plants. Using less electricity – which we can do by using energy-saving lighting – is the best protection for health and the environment.

Who is Affected by the UWR for Lamps?

- Regulated generators of dangerous waste (Medium Quantity and Large Quantity Generators)
- Businesses that generate or accumulate dangerous waste lamps in regulatedquantities (this category may include commercial building/property owners that maintain the lighting for tenants)
- Businesses that provide collection and management services (e.g., lighting contractors)

Regulated generators of dangerous waste generate over 220 pounds of total dangerous waste per month or batch (or 2.2 pounds of extremely hazardous waste), or accumulate greater than 2,200 pound of dangerous waste (or 2.2 pounds of extremely hazardous waste) at any time. As a point of reference, four (4), four-foot long, linear fluorescent tubes equal approximately 2.2 pounds. It would take about 400 of those tubes to equal 220 pounds and approximately 4,000 of those tubes to equal 2,200 pounds.

NOTE: Small Quantity Generators (SQGs) are exempt from the UWR (they are subject to WAC 173-303-070(8)) and can manage dangerous waste lamps as SQG dangerous waste. Households are also exempt from the rule. Local governments and/or landfills, however, may restrict disposal by SQGs and households. (If a SQG generates dangerous waste lamps in quantities that would put them into a higher generator category, they should choose to manage those lamps as universal waste to retain their SQG status.

Under the UWR, there are small quantity handlers, large quantity handlers, transporters and destination facilities.

- Handlers are the generators of the universal waste or businesses that receive and collect universal waste before shipping to another handler or to a destination facility.
- Transporters transport the lamps between handlers, or to a destination facility.
- Destination facilities recycle the lamps, or provide treatment, storage and disposal to a dangerous waste landfill.

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NOTE: Businesses that generate and manage dangerous wastes and universal wastes are considered both a dangerous waste generator, and a universal waste handler.

Significant Benefits

Benefits for managing dangerous waste lamps as universal waste include:

- Waste is not counted toward waste generation totals to determine generator status.
- Waste is not reported on the Dangerous Waste Annual Report.
- Waste does not need to be manifested when sent off-site.
- Accumulation time limit for universal waste is increased to one year.

What is the Difference Between the 1998 UWR and the UWR with Lamps?

There is one significant difference regarding when a lamp handler becomes a large quantity handler, subject to more requirements:

Handler Type	Pre-2000 Rule	New Rule with Lamps
Small Quantity Handler	Accumulate less than 11,000 pounds of Universal Waste	Accumulate less than 2,200 pounds of lamps, or less than 11,000 pounds of total universal waste, including lamps.
Large Quantity Handler	Accumulate 11,000 or more pounds of Universal Waste	Accumulate 2,200 or more pounds of dangerous waste lamps or 11,000 pounds of total universal waste (including lamps)

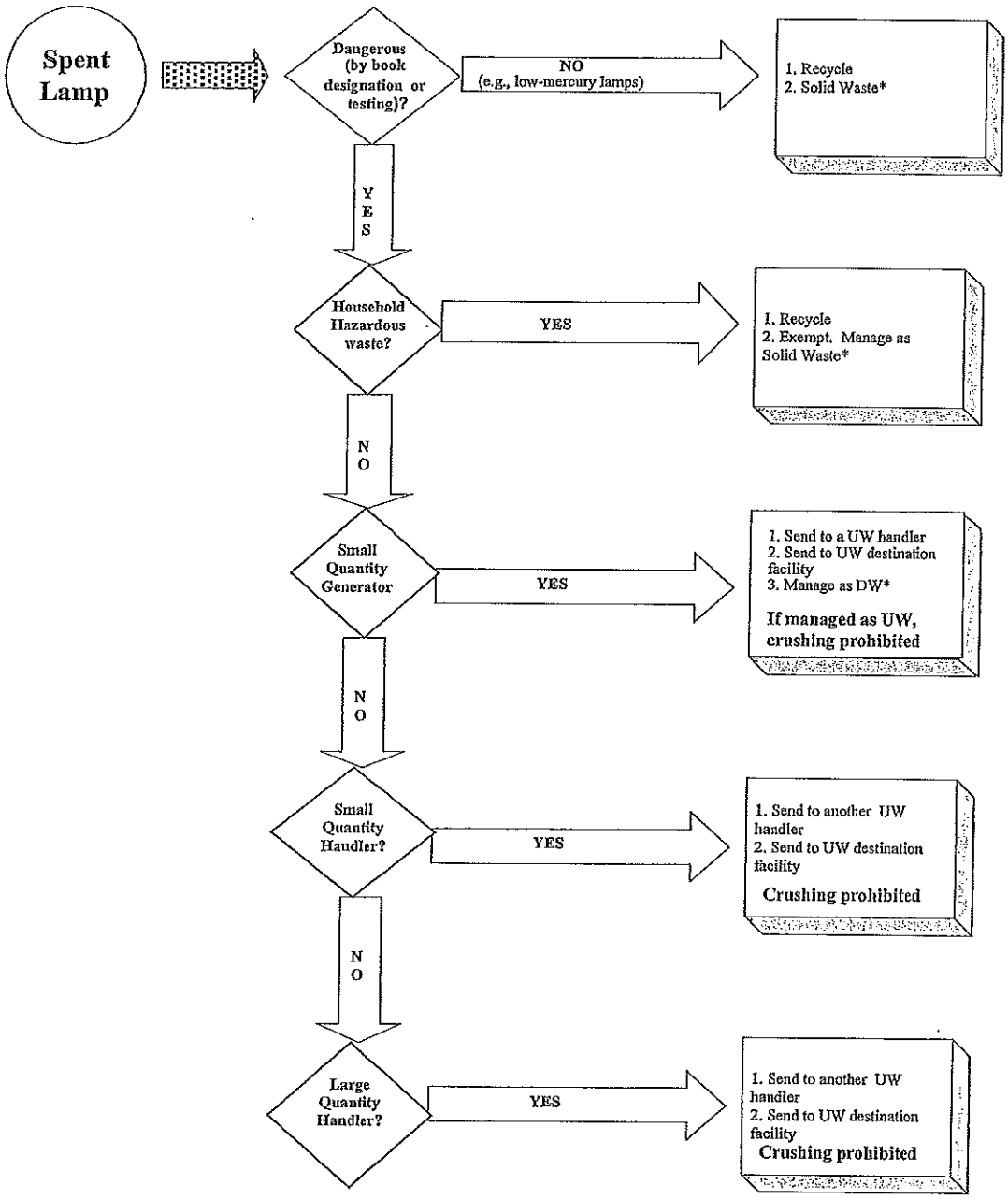
Is On-Site Lamp Crushing to Reduce Volume Allowed?

Universal waste lamp handlers and transporters cannot dispose of or treat universal waste lamps. **This prohibition on treatment includes lamp crushing**. Lamp crushing is considered a treatment-by-generator activity, subject to full regulation under the *Dangerous Waste Regulations.* Crushed lamps must be managed as dangerous waste unless they are shown to be non-dangerous through the designation process.

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Attachment 1

GENERATOR MANAGEMENT OPTIONS FOR WASTE LAMPS



*Check with local health department, solid waste agency or solid waste landfill operator

Attachment 2
UNIVERSAL WASTE LAMP MANAGEMENT REQUIREMENTS

NOTE: Small Quantity Generators (SQGs) are exempt from the UWR (they are subject only to WAC 173-303-070 (8)) and can manage dangerous waste lamps as SQG dangerous waste. Households are also exempt from the rule. Local governments and/or landfills, however, may restrict disposal by SQGs and households. (If a SQG generates dangerous waste lamps in quantities that would put them into a higher generator category, then they should choose to manage those lamps as universal waste to retain their SQG status.)

REQUIREMENTS	SMALL QUANTITY HANDLER	LARGE QUANTITY HANDLER	UW TRANSPORTER	UW DESTINATION FACILITY
Notification and EPA I.D.#	Not required	YES	Not required	YES
Immediately contain by placing in a container any lamps showing evidence of leakage, damage, etc.	YES	YES	YES	Regulated as a TSD or 24 hour recycler (WAC 173-303-140; 173-303-141; 173-303-280 through 173-303-525; 173-303-600 through –173-303-695; 173-303-800 through 173-303-840. OR, If a 24 hour recycler, WAC 173-303-120 (4)(c)
Containerize in closed, structurally sound, compatible containers	YES	YES	YES	
Cardboard/fiber containers may be used (inside storage only)	YES	YES		
Container label required: "Waste Lamps", or "Universal Waste Lamps"	YES	YES		
Track length of time since waste lamp generation. Acceptable methods of proof: date on label, inventory system, etc.	YES	YES		
Response to Releases - Contain releases; determine if DW; if so, manage as specified in Chapter 173-303, WAC	YES	YES	YES	
Prohibited from disposing of Universal Waste	YES	YES	YES	
Treatment (includes crushing) prohibited	YES	YES	YES	
Accumulation Time Limit	One year (longer if proved necessary for proper management)	One year (longer if proved necessary for proper management)	10 days or less at UW transfer facility, otherwise becomes UW handler	
Employee Training	Inform appropriate employees of proper handling and emergency procedures	Ensure appropriate employees are thoroughly familiar with proper handling and emergency procedures	Not required under rule, but recommended	
Tracking of Waste Shipments	Recommended, but not required	Keep records (invoice, manifest, etc.) for 3 years of all shipments received and all shipments sent off-site	If UW is hazardous material under 49CFR171.8, describe in shipping papers per 49CFR Part 172	Keep records (invoice, manifest, etc.)for 3 years of all shipments received
Exporting	EPA Acknowledgment of Consent form from receiving country	EPA Acknowledgment of Consent form from receiving country	EPA Acknowledgment of Consent form must accompany shipment	EPA Acknowledgment of Consent form must accompany shipment
If UW is hazardous material under 49CFR171.8, follow applicable Dept. of Transportation regulations in 49CFR Part 171-180	If self-transporting, defined as a Universal Waste Transporter	If self-transporting, defined as a Universal Waste Transporter	YES	If self-transporting, defined as a Universal Waste Transporter

Attachment 3

FREQUENTLY ASKED QUESTIONS ABOUT UNIVERSAL WASTE LAMPS

Q What types of lamps are included in the UW rule?

A The rule includes, but is not limited to, fluorescent tubes, compact fluorescent, mercury vapor, metal halide, high-pressure sodium and neon lamps. The rule targets those lamps that are frequently used by businesses, institutions, government and utilities, and that are known to have hazardous properties that may cause them to be a dangerous waste, such as mercury and lead. Other types of lamps, such as incandescent, may also have hazardous properties, such as lead in the lamp base, that can cause them to be dangerous waste and as such could be managed as universal waste.

Q What is the difference between a generator and a handler under the UW rule?

A Under the universal waste rule a generator of universal waste is also considered a handler. A handler can be the generator of the lamp, or a business that receives, collects and then sends lamps on to another handler, or to a destination facility.

Q What does the UW rule mean for regulated generators of dangerous waste (medium quantity and large quantity generators)?

A Regulated generators of dangerous waste that also generate dangerous waste lamps should begin managing those lamps as universal waste. The benefits of managing the lamps as universal waste include no counting, no manifesting, no reporting on annual reports, and a longer accumulation time. The January 1995 policy on fluorescent tubes is being replaced by the universal waste rule, so regulated generators no longer have the option of sending their dangerous waste fluorescent tubes to a Municipal Solid Waste landfill.

Q A business doesn't generate any other dangerous waste, but they do have a lot of fluorescent lamps that get changed out – how does the UW rule affect them?

A The affect of the rule on the business depends on a few things. The first is whether or not the lamps are dangerous waste. If the lamps are dangerous waste, then the number of lamps generated and the local regulations for business lamp disposal will affect that business. For such a business, the quantity of dangerous waste lamps generated is going to determine their regulatory status. If the business generates more than 220 pounds of lamps at one time or during one month or accumulates more than 2,200 pounds of lamps at any time, then they would become a regulated dangerous waste generator unless they manage the lamps under the universal waste rule. If the business generates less than 220 pounds of dangerous waste lamps, then they would be considered a small quantity generator (SQG) and subject to the less stringent small quantity generator regulations found at WAC 173-303-070(8). They could choose to manage the lamps as universal waste, or choose to manage the lamps as SQG dangerous waste. The business should check with their local health department, solid waste agency or landfill operator for requirements.

Q A business is currently a small quantity generator (SQG) of dangerous waste, how does the UW rule affect them?

A A business that generates dangerous waste at the small quantity generator level may be affected by the rule. If, in addition to other dangerous wastes they generate, they generate or accumulate dangerous waste lamps in quantities that may push them over the SQG quantity exclusion limits, then they should manage those lamps as universal waste to retain their SQG status. If a business generates dangerous wastes, including dangerous waste lamps, under the SQG

quantity exclusion limits, then they may manage the lamps as SQG dangerous waste. The business should check with their local health department, solid waste agency or landfill operator for requirements.

Q Are manufacturers making lamps that are non-dangerous waste?

A The major lamp manufacturers are producing lamps that pass both the federal Toxicity Characteristic Leaching Procedure (TCLP) test and Ecology's static acute fish toxicity test for state criteria. Check with the lamp manufacturer, your local lamp distributor, or lighting contractor for more information on specific lamp models.

Q Can those non-dangerous waste lamps be managed as solid waste or do they need to be managed as universal waste?

A The universal waste rule only requires that dangerous waste lamps be managed as universal waste. Lamp models that have been shown to be non-dangerous waste would be eligible for disposal to a Municipal Solid Waste landfill, subject to local regulations and landfill operator approval. Of course, the non-dangerous waste lamps still have recyclable components, including glass and the aluminum end caps and metal bases. Additionally, these types of "green" lamps still contain mercury, and pass the TCLP not simply because of the lower mercury content, but because there are other unique lamp components or additives that aid in binding up the mercury so that it doesn't leach during the TCLP test. The manufacturers have all stated that removal of the unique components or additives will generally cause these lamps to fail the TCLP. As always, Ecology recommends recycling over disposal.

Q Will on-site lamp crushing to reduce volume space be allowed under the UW rule?

A No, Ecology did not include an on-site lamp crushing management option in the final universal waste rule. During the rule development, it was determined that the as-proposed performance-based lamp crushing standards were not enough to ensure that uncontrolled releases of mercury and other hazardous constituents would not occur from the use of lamp crushing units currently on the market. Because of this, Ecology could not ensure that handlers would be crushing lamps properly and in a way that did not release mercury or other hazardous constituents into the environment. To address this issue, Ecology would need to add layers of complexity to the universal waste rule in explaining such requirements as engineering controls and maintenance schedules. Adding more complex language and requirements would conflict with the purpose of the universal waste management system.

Q What happens if a universal waste lamp handler mismanages universal wastes?

A The universal waste rule is a subset of the full dangerous waste regulations, and a handler that mismanages universal waste is subject to enforcement. A handler that receives universal waste from others and mismanages the waste would be held liable for the actual regulatory violation, but the other handlers would also be responsible for that mismanagement under our state cleanup law, the Model Toxics Control Act. Since universal wastes are still dangerous wastes, persons remain liable under dangerous waste and cleanup regulations for remediation of any releases from universal waste management.

Q Can a handler of universal waste lamps self-transport universal wastes to another handler or destination facility?

A Yes, that handler may self-transport, but in doing so, must meet the UW transporter requirements.

Q Is a Hazardous Waste Manifest needed if a UW lamp handler chooses to send their UW lamps to a destination facility located in a state that hasn't adopted the universal waste rule for lamps?

A If those lamps are considered hazardous waste in the state the destination facility is located, then a Hazardous Waste Manifest would be required by the receiving state. Additionally, interstate transport of UW lamps may take the lamps through states that have not adopted the universal waste rule for lamps. Those states that have not adopted the universal waste rule for lamps may require a Hazardous Waste Manifest for the portion of the trip those lamps are in their state. Check with the destination facility and/or the states the lamps will travel through to be sure of the requirements.

Q Can I be a generator and a handler?

A Yes, a business that generates dangerous waste, (for example, a flammable solvent) and that generates and manages their universal waste would be considered both a dangerous waste generator and a universal waste handler. A handler of universal waste could also become a generator of dangerous waste. For example, a universal waste handler of lamps may have some lamps break, releasing mercury. The residue from the spill would most likely designate as a dangerous waste and would need managed as such. Residues from such spills could not continue to be managed as universal waste.

Attachment 4

SERVICES DIRECTORY FOR LAMPS AND BALLASTS

The Department of Ecology does not assume any liability for the accuracy or completeness of this information. A listing of a firm in this directory does not constitute a recommendation.

Name of Company	City	State	Phone	E-Mail Address	SERVICE
Able Clean-Up Technologies	Spokane	WA	(509) 466-5255	ksilverh2o@email.msn.com	Transportation of lamps and ballasts
Advanced Environmental Solutions	Seattle	WA	(206) 652-2323	justin@advenvironmental.com	Equipment & containers
Big Sky Industrial	Spokane	WA	(509) 624-4949	bigsky@iea.com	Arrange for ballast disposal
Creative Environmental Technologies	Tacoma	WA	(888) 627-3347, (253) 627-3347	ceti@cetinw.com	Arrange for lamp and ballast transportation
Earth Protection Services	Lake Oswego	OR	(503) 620-2466 (800) 588-7190	earthpro@cyberhighway.net	Lamp recycling and ballast management
Eastern Environmental Technologies	Port Chester	NY	(800) 808-PCBS	eet@erols.com	Lamp recycling and ballast management
Eco Lights NW	Seattle	WA	(206) 343-1247	amyf@totalreclaim.com	Full service lamp recycler and ballast management
Envirotech Systems	Seattle	WA	(800) 922-9395	envsys1@aol.com	Arrange for lamp recycling and ballast disposal
Evergreen Environmental	Aberdeen	WA	(360) 533-6141	LarryM@olynet.com	Arrange for ballast disposal
FBN Enterprises	Kirkland	WA	(425) 820-8115		Arrange for lamp and ballast reycling or disposal
Foss Environmental Services	Seattle	WA	(206) 768-1426	seattleinfo@foss.com	Transportation of lamps and ballasts
Lighting Resources	Phoenix	AZ	(800) 572-9253	ben@voidnet.com	Lamp recycling and ballast management
MCS Environmental	Spokane	WA	(509) 924-9236	mcsspok@ez.eznet	Arrange for lamp and ballast recycling or disposal
Mercury Technologies of Minnesota	Pine City	MN	(800) 864-3821	merctech@ecenet.com	Lamp recycling and ballast management
Midwest Recycling & Recovery Services	Dubuque	IA	(800) 311-9636		Arrange for lamp and ballast recycling or disposal
NSSI Recovery Services	Houston	TX	(713) 641-0391	rdgallagher@nssihouston.com	Limited lamp and ballast disposal services
Nu-Life Industries	Aldergrove	BC	(604) 857-5588	info@nulife-ind.com	Lamp recycling and non-PCB ballast management
Onyx Environmental Services, LLC	Tukwila	WA	(206) 241-3900 or (800) 334-2387	jim_beck@wastemanagement.com	Transportation of lamps and ballasts

Name of Company	City	State	Phone	E-Mail Address	SERVICE
Philip Services	Renton	WA	(425) 227-0311 or (800) 228-7872	londamay@philip-serv.com	Transportation of lamps and ballasts
Philip Services	Washougal	WA	(800) 547-2436	londamay@philip-serv.com	Transportation of lamps and ballasts
Phoenix Environmental	Fife	WA	(253) 779-8474		Limited t\ansportation of lamps and ballasts
Prezant Associates	Seattle	WA	(206) 368-4252 or (206) 281-8858	prezant@prezant.com	Industrial hygiene, safety and health consulting
Recyclights West LLC	Glendora Las Vegas	CA NV	(626) 335-3042 (702) 633-7900	recwest@aol.com	Lamp recycling at Las Vegas facility – no ballast management
Romic Environmental	Tacoma	WA	(253) 229-6569	gregc@romic.com	Transportation of lamps and ballasts to CA facility
RTW	University Place	WA	(253) 566-5819	mthinc@foxinternet.net	Arrange for lamp and ballast recycling or disposal
Safety Kleen, Auburn	Auburn	WA	(206) 939-2022		Transportation of lamps and ballasts
Safety Kleen, Lynnwood	Lynnwood	WA	(425) 775-7030		Transportation of lamps and ballasts
Safety Kleen, Pasco	Pasco	WA	(509) 547-8771	mikekendall@safetykleen.com	Transportation of lamps and ballasts
Safety Kleen, Spokane	Spokane	WA	(509) 928-8353	DavidBlackham@safetykleen.com	Transportation of lamps and ballasts
Superior Special Services (formerly Salesco Systems)	Phoenix	AZ	(800) 368-9095	mdezelon@ssusa.com	Lamp recycling and ballast management
Van Waters & Rogers, Kent	Kent	WA	(800) 909-4897	kraen.troutman@dwr-inc.com	Arrange for lamp recycling and ballast management
Van Waters & Rogers, Spokane	Spokane	WA	(800) 909-4897	ietxp@vwr-inc.com	Arrange for lamp recycling and ballast management
WasteXpress	Portland	OR	(503) 224-3206	wastex@easystreet.com	Transportation of lamps and ballasts

Appendix G: **Inspector / Laboratory Certifications**

This report shall not be reproduced except in full without written permission of Pacific Rim Environmental, Inc.

Certificate of Completion

This is to certify that

Matthew R. DeDominces

has satisfactorily completed
4 hours of refresher training as an

Asbestos Building Inspector

to comply with the training requirements of
TSCA Title II / 40 CFR 763 (AHERA)

134851
Certificate Number

Instructor
EPA Provider Cert. Number: 1085

ARGUS PACIFIC
TRAINING • CONSULTING

Jan 4, 2012
Date(s) of Training
Exam Score: NA
Expiration Date: Jan 3, 2013

Argus Pacific, Inc. • 1900 W. Nickerson, Suite 315 • Seattle, Washington • 98119 • 206.285.3373 • fax 206.285.3927

STATE OF WASHINGTON

Department of Commerce

Lead-Based Paint Program

Matthew R. De Dominces

Has fulfilled the certification requirements of Washington Administrative code (WAC) 365-230 and has been certified to conduct lead-based paint activities pursuant to WAC 365-230-200 as a:

Inspector

Certification #	Issuance Date	Expiration Date
6277	12/8/2010	12/8/2013

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101631-0

Pacific Rim Environmental, Inc.

Tukwila, WA

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2012-04-01 through 2013-03-31

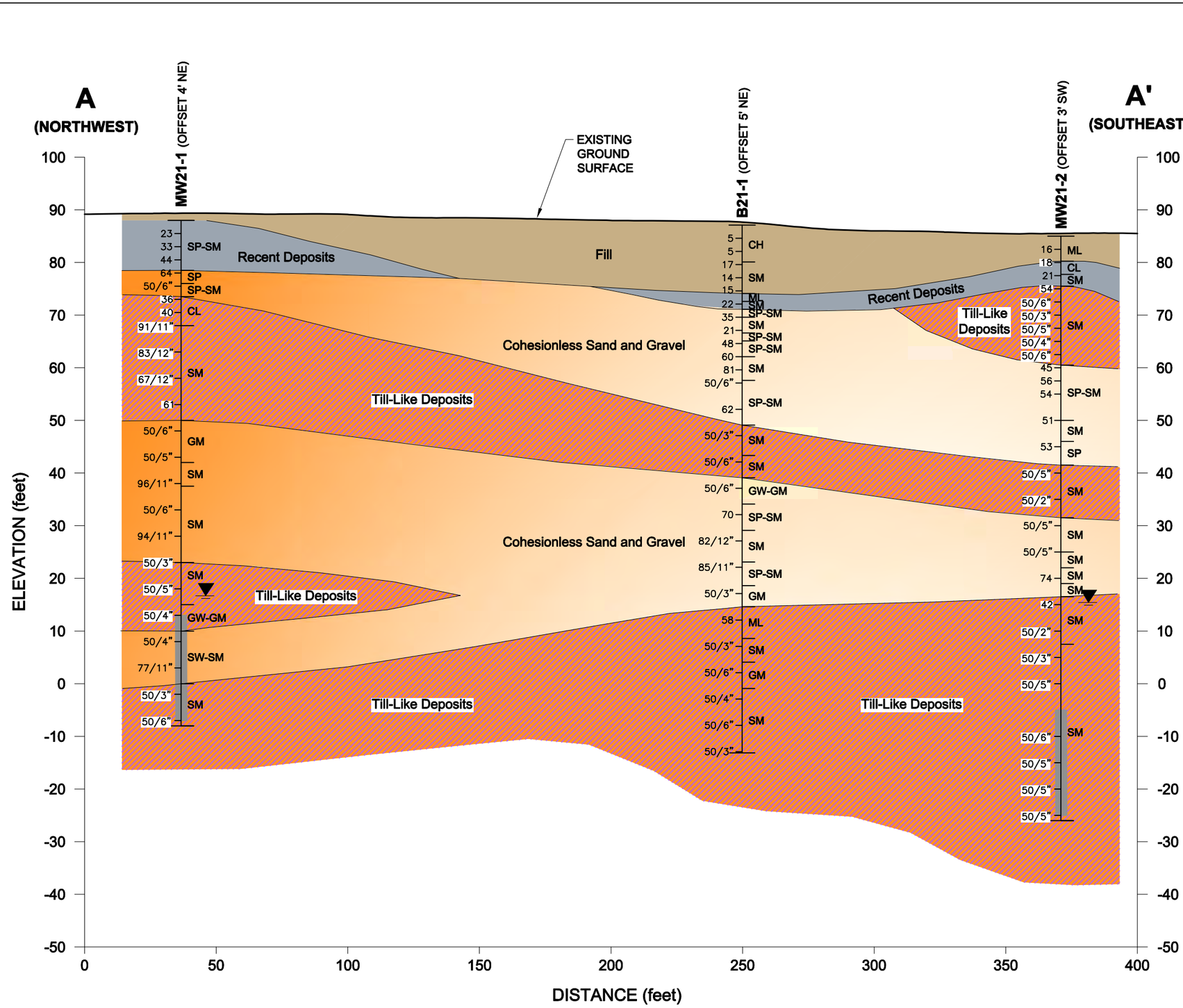
Effective dates

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

David F. Alderman

For the National Institute of Standards and Technology

APPENDIX B
Interpreted Subsurface Conditions – Geologic Cross-Sections



Legend

- Boring ID (B21-1)
- Inferred Soil Contact
- Groundwater Level Observed in Piezometer
- Soil Classification (SM)
- Blow Count (25)
- Well Screen Interval

- Fill
- Recent Deposits
- Cohesionless Sand and Gravel
- Till-Like Deposits

40 0 40
Horizontal Scale in Feet
20 0 20
Vertical Scale in Feet
Vertical Exaggeration: 2X

Notes

1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
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.

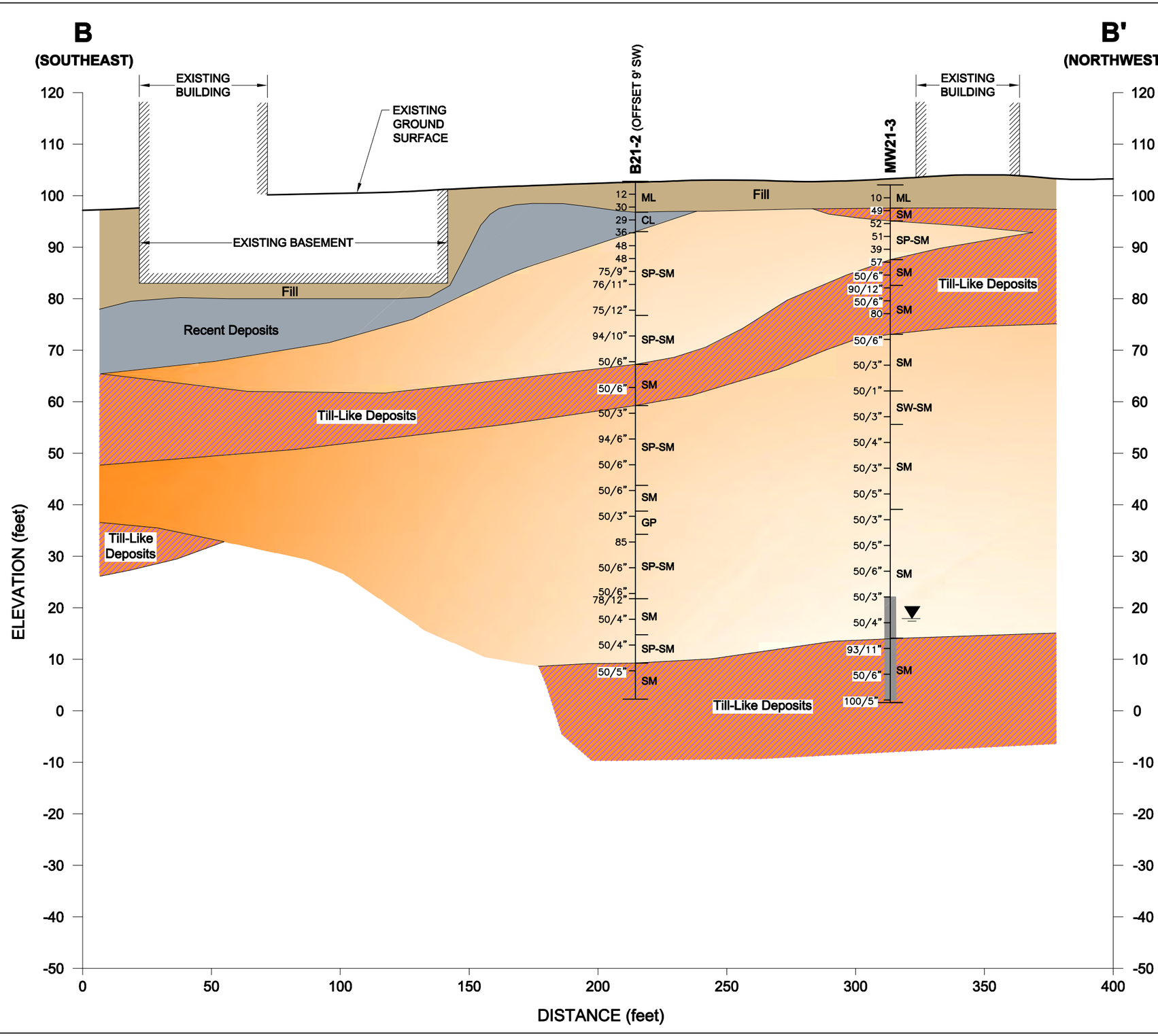
Reference: Existing ground surface data from Puget Sound LIDAR Consortium, 2000.

Cross-Section A-A'

Rufus 2.0 Block 21
Seattle, Washington

GeoEngineers | **Figure B-1**

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Legend

- B21-5 — Boring ID
- Inferred Soil Contact
- Groundwater Level Observed in Piezometer
- SM — Soil Classification
- 25 — Blow Count
- Well Screen Interval
- Fill
- Recent Deposits
- Cohesionless Sand and Gravel
- Till-Like Deposits

Horizontal Scale in Feet: 40 0 40

Vertical Scale in Feet: 20 0 20

Vertical Exaggeration: 2X

Notes

1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
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.

Reference: Existing ground surface data from Puget Sound LIDAR Consortium, 2000.

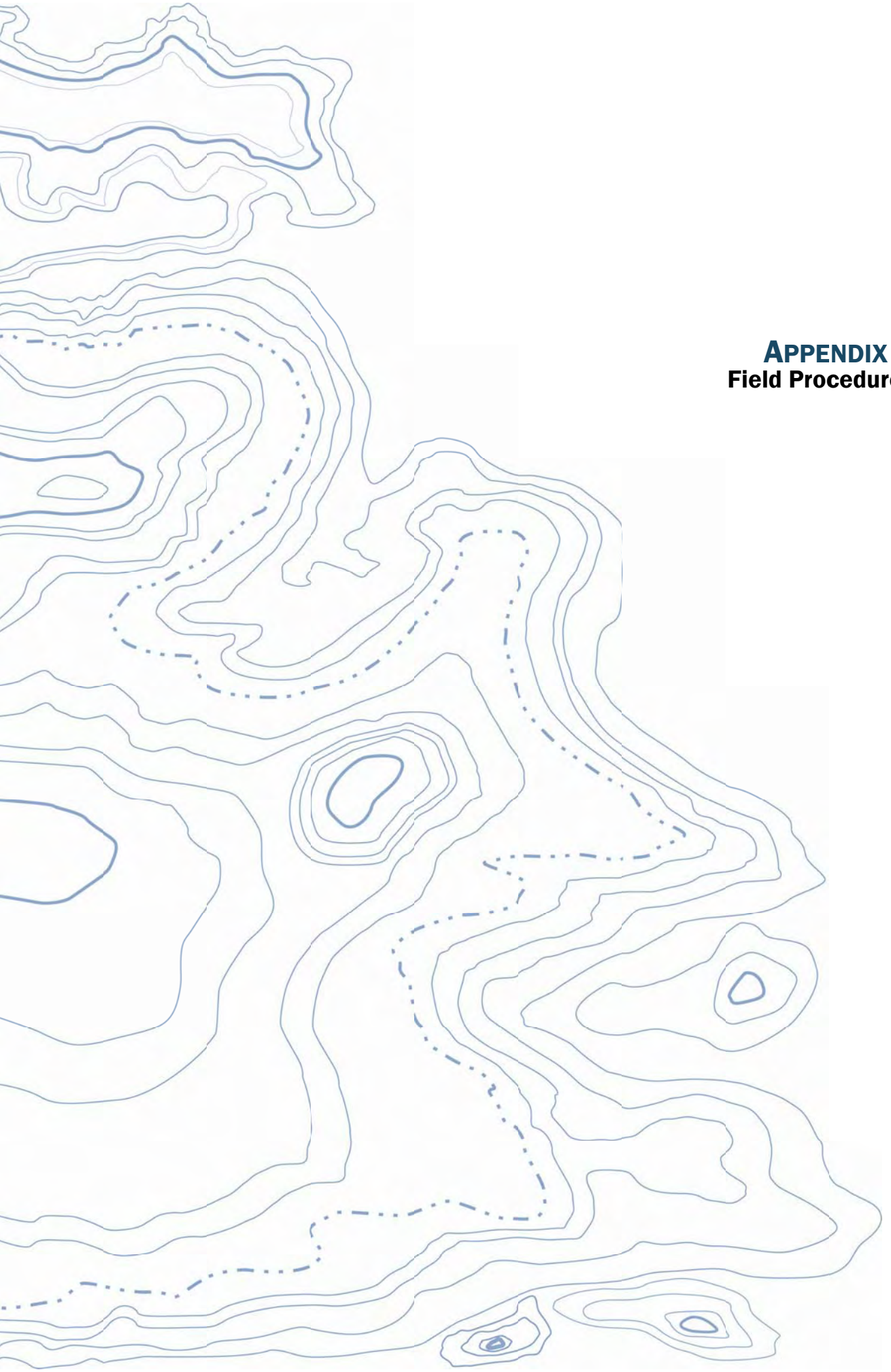
Cross-Section B-B'

Rufus 2.0 Block 21
Seattle, Washington

GeoEngineers

Figure B-2

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APPENDIX C
Field Procedures

APPENDIX C
FIELD PROCEDURES

Underground Utility Locate

Prior to drilling activities, an underground utility locate was conducted in the area of the proposed boring locations to identify any subsurface utilities and/or potential underground physical hazards. An underground utility check consisting of contacting a local utility alert service and a private utility locating service was also performed.

Soil Sampling

Soil samples were obtained from power borings advanced using two methods:

- A truck-mounted direct-push drilling equipment operated by Cascade Drilling of Woodinville, Washington. Direct push drilling was conducted in general accordance with Washington Administrative Code (WAC) 173-760 by a Washington state licensed drilling company. Continuous soil cores were obtained from the direct-push borings using 1.5-inch diameter, 5-foot long stainless steel sampler rods driven with a pneumatic hammer. Soil samples were collected in clean, plastic 1.5-inch diameter disposable liners. The liners were placed inside the sampling rod and then hydraulically driven or pushed into the soil at the selected sampling depth.
- A track-mounted, continuous-flight, hollow-stem auger drilling equipment operated by Geologic Drill of Spokane, Washington. The hollow-stem auger borings were generally sampled at 2½- and 5-foot vertical intervals with a 2-inch outside diameter split-barrel standard penetration test (SPT) sampler. The disturbed samples were obtained by driving the sampler 18 or 24 inches into the soil with a 140-pound hammer free-falling 30 inches. The number of blows required for each 6 inches of penetration was recorded. The blow count ("N-Value") of the soil was calculated as the number of blows required for the second and third 6-inch intervals. This resistance, or N-value, provides a measure of the relative density of granular soils and the relative consistency of cohesive soils. Where very dense soil conditions precluded driving at least 18 inches, the penetrations resistance for the partial penetration was entered in the logs. The blow counts are shown on the boring logs at the respective sample depths.

A representative from our staff classified the soil encountered in each of the borings. Soil in the explorations was visually classified in general accordance with ASTM D 2488-94. The boring logs are presented in Figures C-2 through C-20.

The sampling equipment was decontaminated before each sampling attempt with a Liqui-Nox® solution wash and a distilled water rinse. Soil samples were obtained for field screening and possible chemical analysis. Soil samples obtained during the exploration activities were collected from the sampler with a stainless steel knife or new gloves. A portion of each sample was placed in laboratory-prepared sample jars for possible chemical analysis. The remaining portion of each sample was used for field screening. The sampling equipment was decontaminated prior to each use with a Liqui-Nox® soap solution, distilled water rinse.

At least one sample from each boring was selected for chemical analysis, based on criteria described in the report above. Samples submitted for chemical analysis are shown on the logs. The soil samples were placed in a cooler with ice for transport to the laboratory. Standard chain-of-custody procedures were followed in transporting the soil samples to the laboratory.

Field Screening of Soil Samples

Soil samples obtained from the borings were screened in the field for evidence of contamination using: 1) visual examination; 2) sheen screening; and/or 3) or photo-ionization detector (PID). The results of headspace and sheen screening are included in the boring logs and in Table 1 for soil samples tested by chemical analysis.

Visual screening consists of inspecting the soil for stains indicative of petroleum-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons, such as motor oil or hydraulic oil, or when hydrocarbon concentrations are high. Sheen screening and headspace vapor screening are more sensitive methods that have been effective in detecting contamination at concentrations less than regulatory cleanup guidelines. Sheen screening involves placing soil in a pan of water and observing the water surface for signs of sheen. Sheen classifications are as follows:

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

Headspace vapor screening involves placing a soil sample in a plastic sample bag. Air is captured in the bag and the bag is shaken to expose the soil to the air trapped in the bag. The probe of a PID is inserted in the bag and the instrument measures the concentration of combustible vapor in the air removed from the sample headspace. The PID measures concentrations in ppm (parts per million) and is calibrated to isobutylene. The PID is designed to quantify combustible gas and organic vapor concentrations up to 2,500 ppm. Field screening results are site-specific and vary with soil type, soil moisture content, temperature and type of contaminant.

Groundwater Monitoring

Monitoring Well Development

Each of the monitoring wells were developed prior to sampling efforts with either a submersible pump and dedicated tubing or by hand using a disposable bailer. Development activities at each well were continued until at least three well volumes of water were purged or the well went dry, whichever occurred first.

Depth to Groundwater

The depths to the groundwater table relative to ground surface were measured using an electric water level indicator. The electric indicator was cleaned with a Liqui-Nox® solution wash and a distilled water rinse prior to use in each well.

Groundwater Sampling

Groundwater samples were obtained either with a peristaltic pump, new plastic tubing, a flow-through cell and water parameter analyzer or using a bailer after at least three well volumes of water were removed from each well casing, the well was purged dry or monitored parameters such as dissolved oxygen, temperature and conductivity stabilized over time indicating that groundwater from outside of the well casing is being removed from the well. The water samples were transferred in the field to laboratory-prepared sample containers and kept cool during transport to the testing laboratory. The sample containers were filled completely to eliminate headspace in the container. Chain-of-custody procedures were followed in transporting the water samples to the testing laboratory.

Investigative Waste Disposal

Drill cuttings and decontamination/purge water generated during drilling activities were temporarily stored on site in labeled 55-gallon drums and were removed from the site at the end of every day. The drums were picked up by Aqua Clean and transported to CEMEX, a soil disposal facility in Everett, Washington for permitted disposal. Copies of the waste disposal tickets are included in this appendix.

SOIL CLASSIFICATION CHART

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

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	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**

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.

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

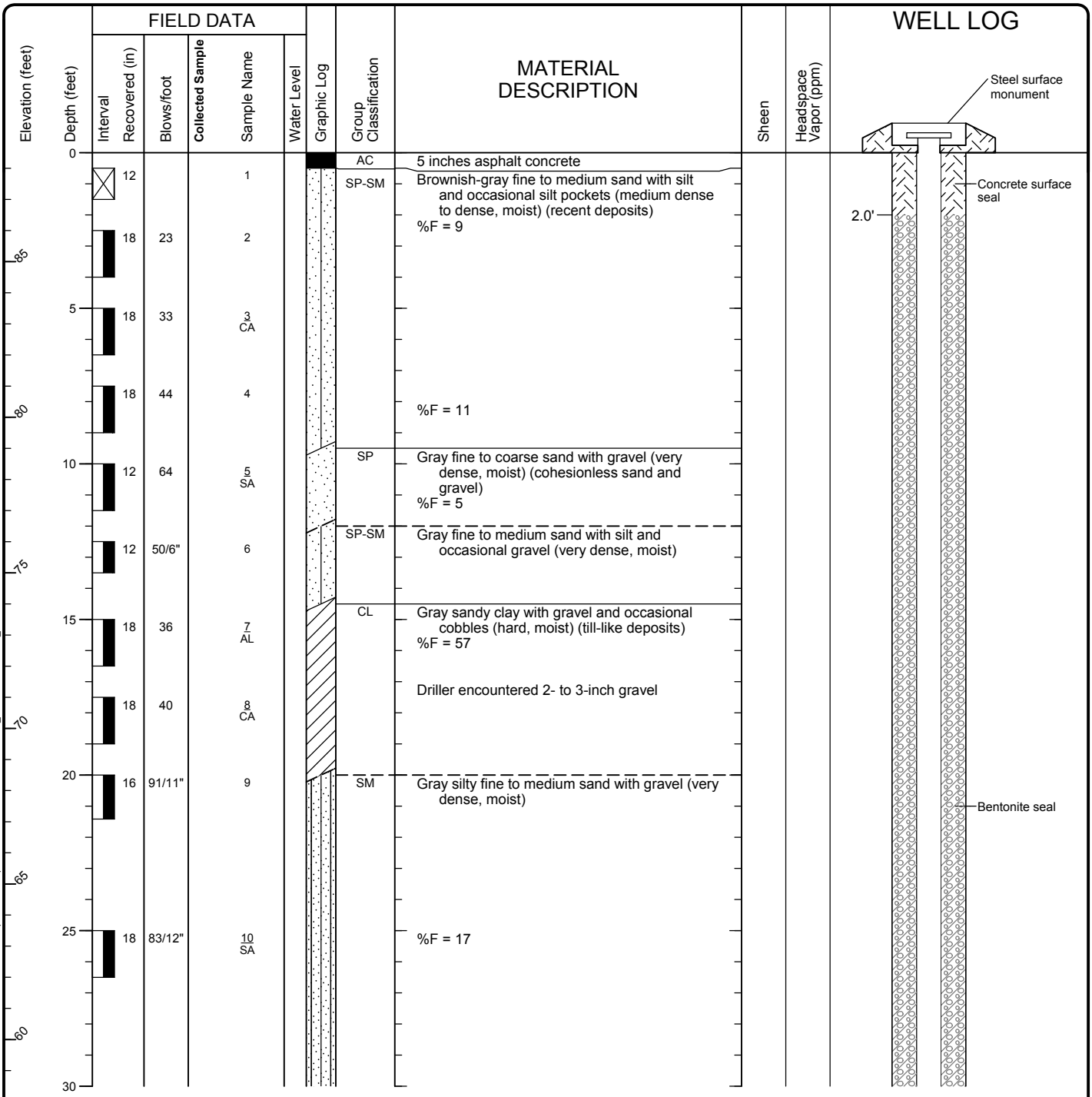
GeoEngineers

FIGURE C-1

Drilled Start 10/10/2012	End 10/10/2012	Total Depth (ft) 96	Logged By SLG / Checked By LCF	Driller Geologic Drill Exploration, Inc.	Drilling Method Hollow-Stem Auger

Hammer Data: Automatic Hammer 140 (lbs) / 30 (in) Drop	Drilling Equipment: Diedrich D50	DOE Well I.D.: BHM 358 A 2 (in) well was installed on 10/10/2012 to a depth of 95 (ft).	
Surface Elevation (ft) Vertical Datum: 88.5 NAVD88	Top of Casing Elevation (ft): 88.1	Groundwater	
Easting (X) Northing (Y)	Horizontal Datum	Date Measured: 10/15/2012	Depth to Water (ft): 71.7 / Elevation (ft): 16.8

Notes: Field screening completed for each sample to a depth of 30 feet. No sheen or contaminated odor was observed, and headspace vapor was less than 1 ppm.



Note: See Figure A-1 for explanation of symbols.

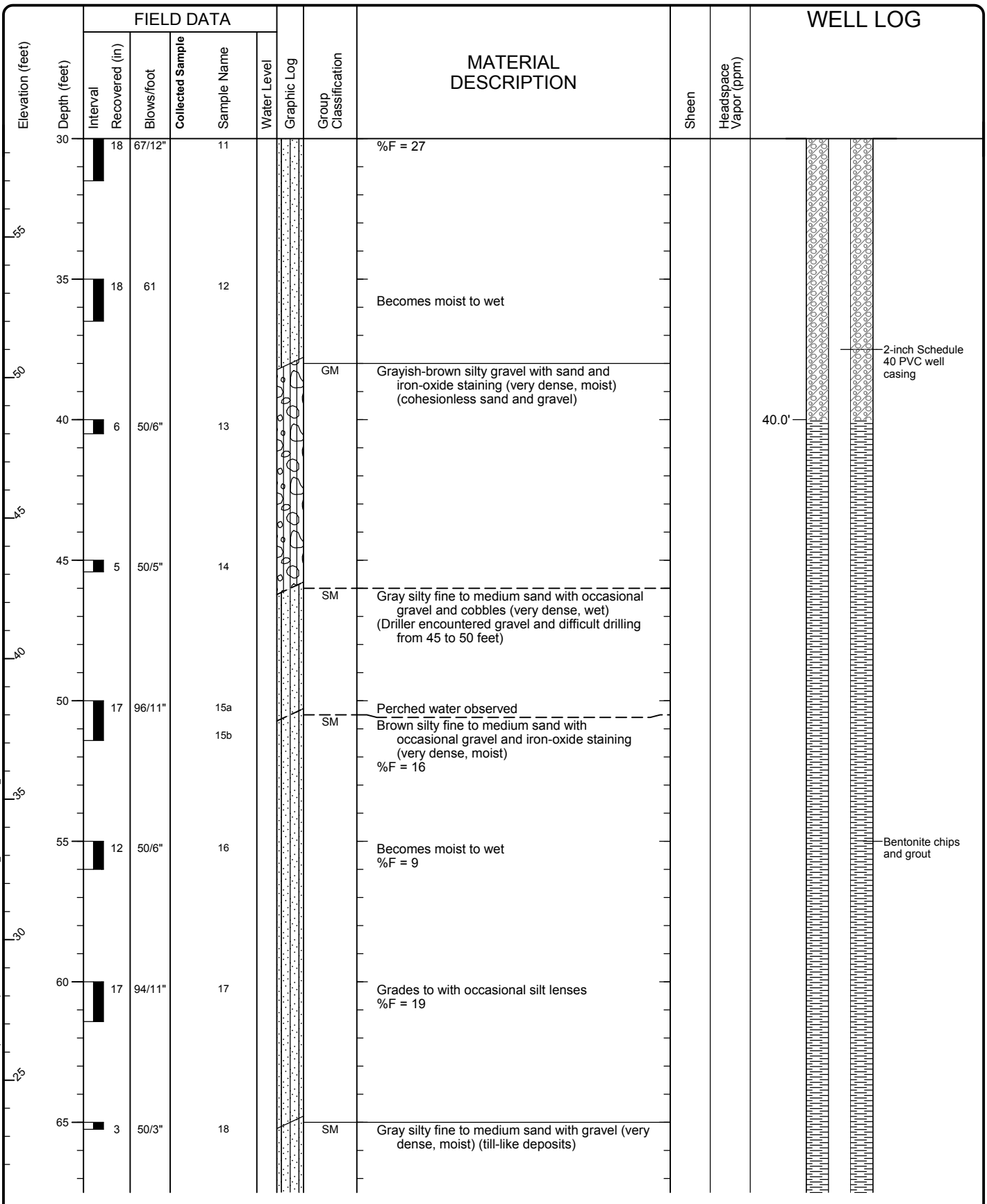
Log of Monitoring Well MW21-1

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-2
Sheet 1 of 3

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL



Note: See Figure A-1 for explanation of symbols.

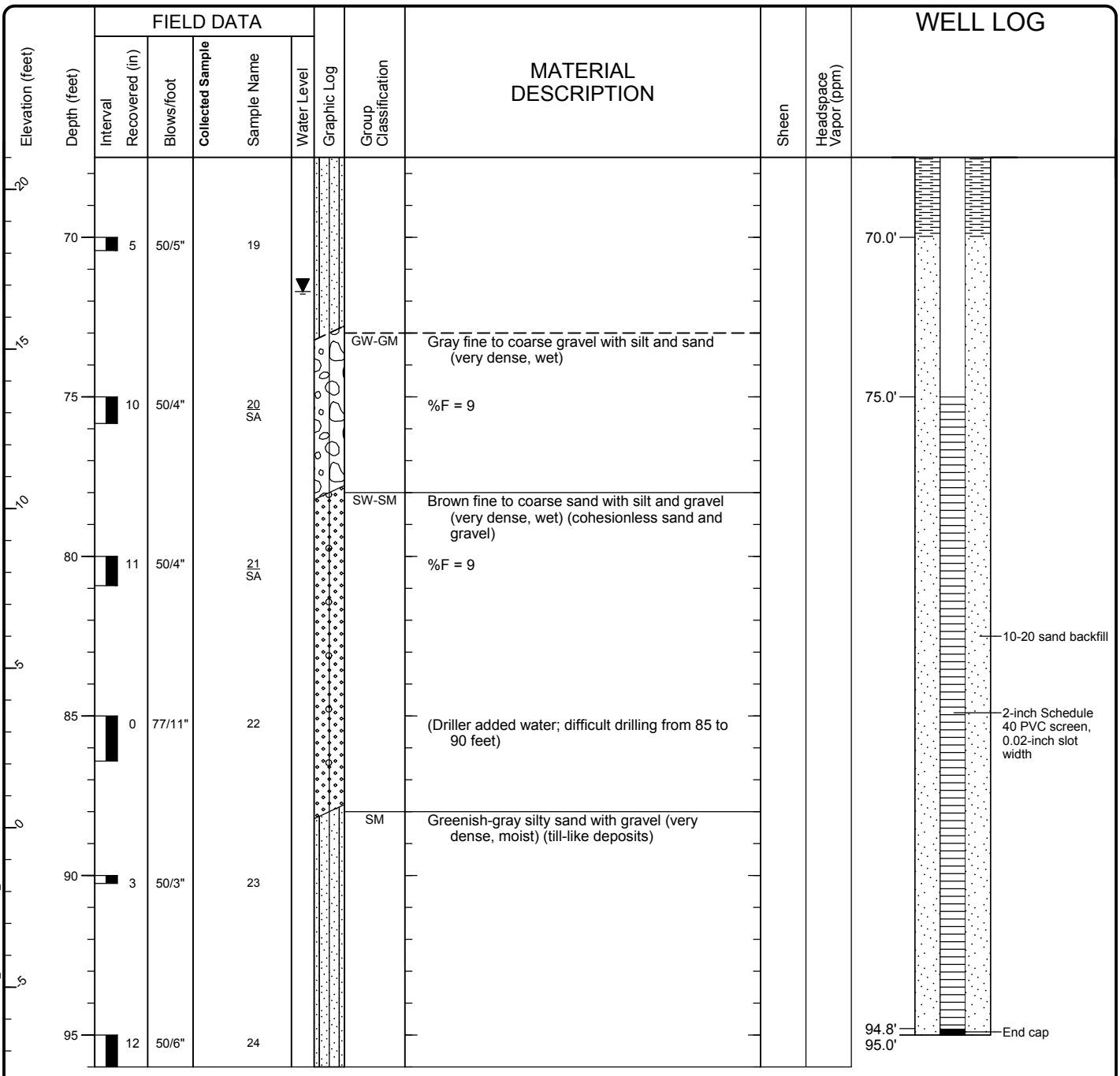
Log of Monitoring Well MW21-1 (continued)

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-2
Sheet 2 of 3

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL



Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well MW21-1 (continued)

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-2
Sheet 3 of 3

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
10/8/2012	10/8/2012	111	SLG / LCF	Geologic Drill Exploration, Inc.	Hollow-Stem Auger

Hammer Data	Automatic Hammer 140 (lbs) / 30 (in) Drop	Drilling Equipment	Diedrich D50
Surface Elevation (ft) / Vertical Datum	85.5 NAVD88	Top of Casing Elevation (ft)	85.1
Easting (X) / Northing (Y)		Horizontal Datum	

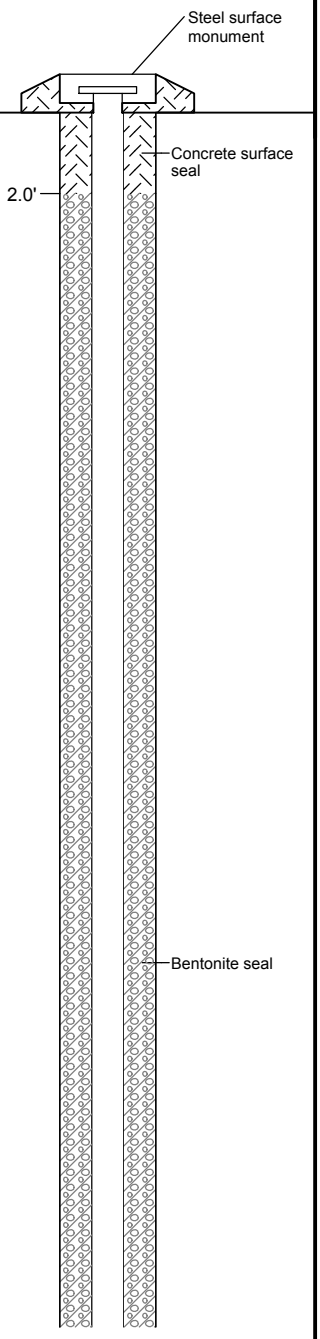
DOE Well I.D.: BHM 356
A 2 (in) well was installed on 10/8/2012 to a depth of 110 (ft).

Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
10/15/2012	69.6	15.9

Notes: Field screening completed for each sample to a depth of 30 feet. No sheen or contaminated odor was observed, and headspace vapor was less than 1 ppm.

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)
85	0							AC	1.5 inches asphalt concrete		
								CR	5 inches crushed rock base course		
		6			1			ML	Brown silt with sand and occasional gravel (stiff to very stiff, moist) (fill)		
		8	16		2				With orange mottling (stiff to very stiff, moist)		
80	5	18	18		3 AL			CL	Brown clay with sand (very stiff, moist) (recent deposits)		
		18	21		4 CA			SM	Brown silty fine to medium sand with occasional gravel and trace organics		
75	10	18	54		5 SA			SM	Grayish-brown silty fine to medium sand with gravel and occasional cobbles (very dense, moist) (till-like deposits) %F = 29		
		10	50/6"		6						
70	15	3	50/3"		7				(Rock in bottom of sampler shoe) %F = 12		
		11	50/5"		8				(Sampler bounces on rock at 17.5 feet)		
65	20	10	50/4"		9 CA						
		12	50/6"		10						
60	25	18	45		11			SP-SM	Grayish-brown fine to medium sand with silt (dense, moist) (cohesionless sand and gravel) %F = 6		
		18	56		12				Grades to very dense %F = 10		
	30										

WELL LOG



Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well MW21-2

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-3
Sheet 1 of 4

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	WELL LOG
										%F = 11			
50	35		18	51		14			SM	Grayish-brown silty fine to medium sand (very dense, moist) %F = 14			
									SP	Grayish-brown fine to medium sand (very dense, moist) %F = 5			40.0'
45	40		18	53		15							
									SM	Dark gray silty sand with gravel and occasional cobbles (very dense, moist) (till-like deposits) (Driller noted gravel at 43.5 feet)			2-inch Schedule 40 PVC well casing
40	45		11	50/5"		16							
35	50		12	50/2"		17				(Sampler bouncing on rock)			
									SM	Orange-brown silty fine to medium sand (very dense, moist) (cohesionless sand and gravel) %F = 13 Small amount of wood fragments in cuttings from 55 to 60 feet			
30	55		4	50/5"		18							Bentonite and grout
25	60		17	50/5"		19			SM	Orange-brown silty fine to medium sand with iron-oxide staining (very dense, moist to wet)			
									SM	Gray silty fine to medium sand (very dense, moist to wet) %F = 13			
20	65		18	74		20a							
						20b			SM	Orange-brown fine to medium sand (very dense, moist to wet)			

Note: See Figure A-1 for explanation of symbols.

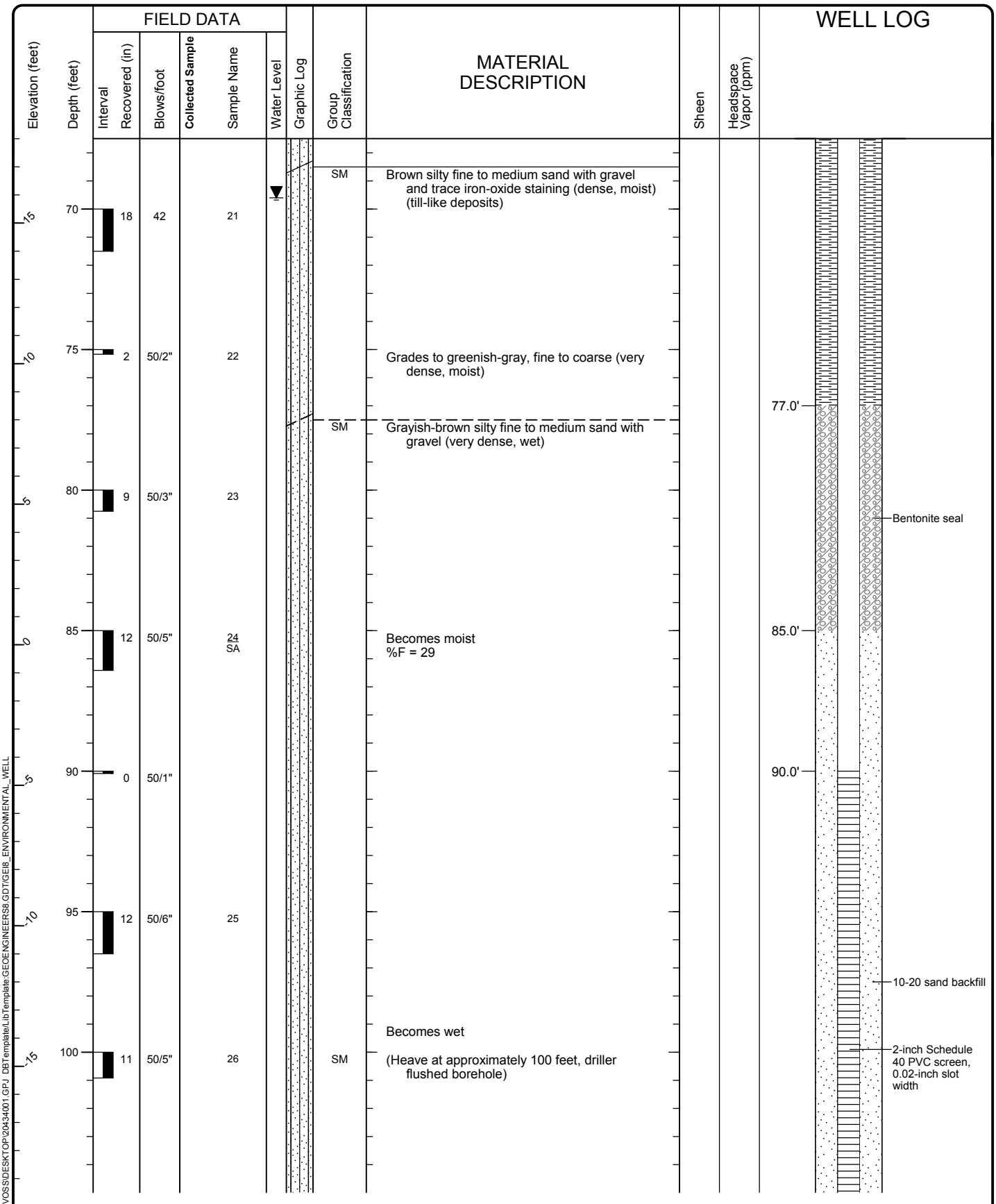
Log of Monitoring Well MW21-2 (continued)

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-3
Sheet 2 of 4

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL



Note: See Figure A-1 for explanation of symbols.

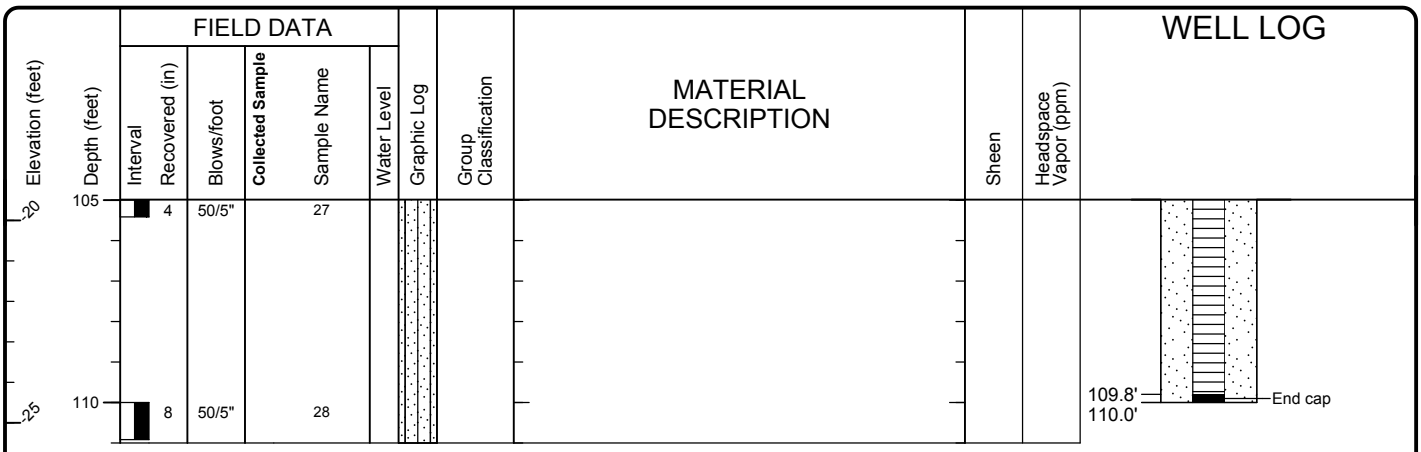
Log of Monitoring Well MW21-2 (continued)

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-3
Sheet 3 of 4

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL



Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well MW21-2 (continued)

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-3
Sheet 4 of 4

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
10/9/2012	10/9/2012	100.5	SLG / LCF	Geologic Drill Exploration, Inc.	Hollow-Stem Auger

Hammer Data	Automatic Hammer 140 (lbs) / 30 (in) Drop	Drilling Equipment	Diedrich D50
Surface Elevation (ft) / Vertical Datum	102.8 NAVD88	Top of Casing Elevation (ft)	102.2
Easting (X) / Northing (Y)		Horizontal Datum	

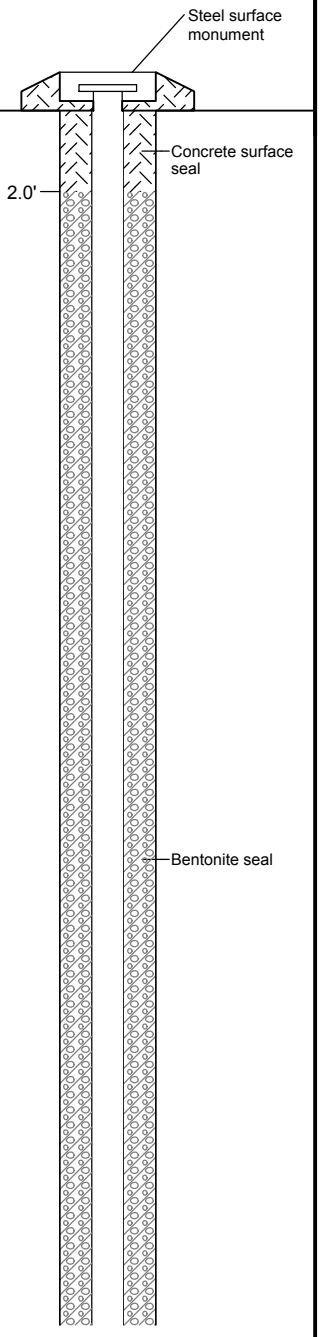
DOE Well I.D.: BHM 357
A 2 (in) well was installed on 10/9/2012 to a depth of 100 (ft).

Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
10/9/2012	84.2	18.6

Notes: Field screening completed for each sample to a depth of 30 feet. No sheen or contaminated odor was observed, and headspace vapor was less than 1 ppm.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)
	0								AC	6 inches asphalt concrete		
			12			1			ML	Grayish-brown sandy silt with occasional gravel (stiff, moist) (fill)		
100			18	10		2 CA						
	5		18	49		3			SM	Brownish-gray silty fine to coarse sand with occasional gravel (dense, moist) (till-like deposits)		
95			12	52		4			SP-SM	Gray fine sand with silt (very dense, moist) (cohesionless sand and gravel) %F = 8		
	10		12	51		5				Grades to with occasional silt lenses		
90			12	39		6				Becomes dense		
	15		18	57		7			SM	Grayish-brown silty fine to medium sand with occasional gravel (very dense, moist) (till-like deposits)		
85			12	50/6"		8						
	20		18	90/12"		9 SA			SM	Brownish-gray silty fine to medium sand with gravel (very dense, moist) %F = 30		
80			6	50/6"		10						
	25		18	80		11 CA						
75									SM	Gray silty fine to coarse sand with gravel (very dense, moist) (cohesionless sand and gravel)		
	30											

WELL LOG



Note: See Figure A-1 for explanation of symbols.

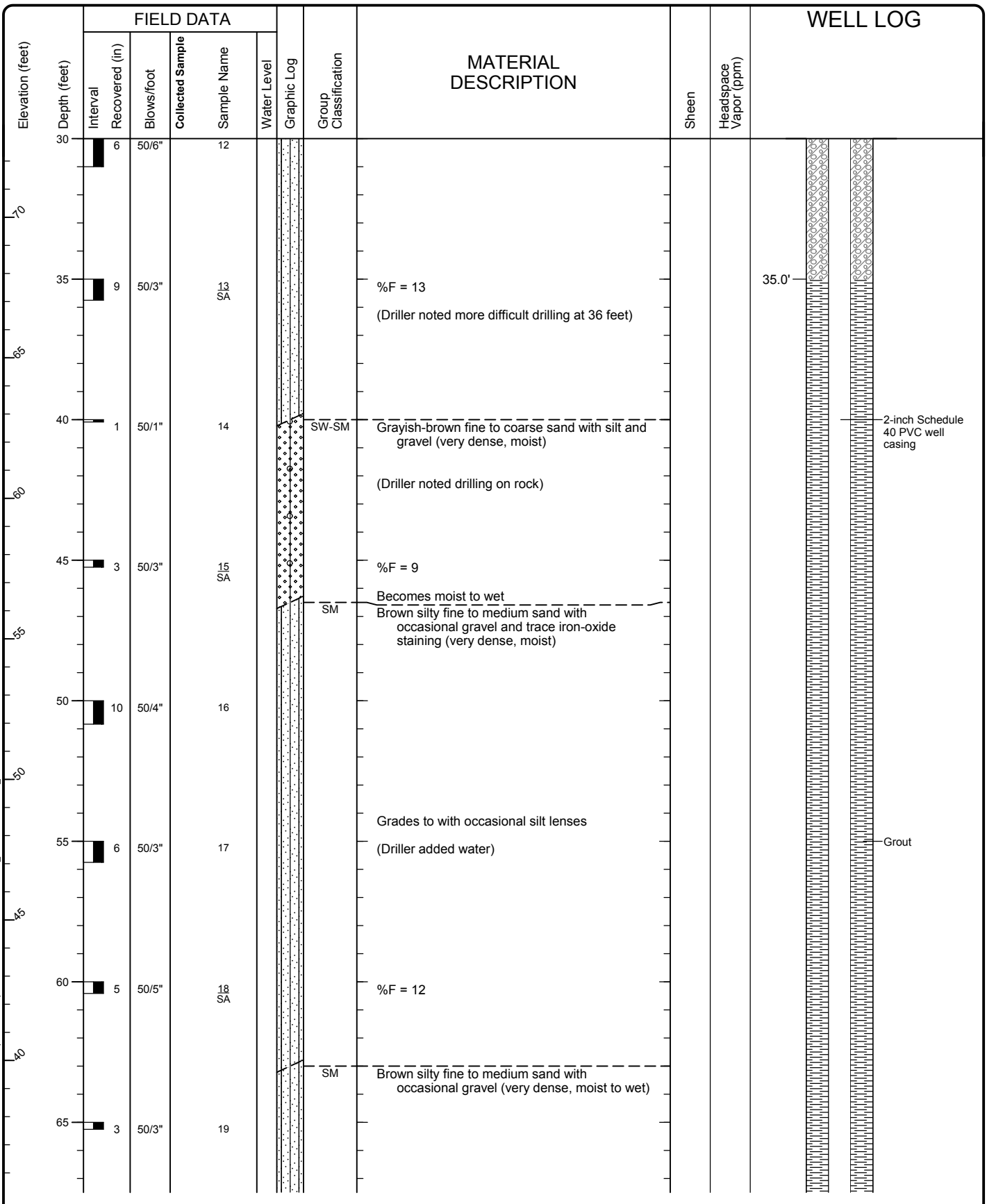
Log of Monitoring Well MW21-3

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-4
Sheet 1 of 3

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL



Note: See Figure A-1 for explanation of symbols.

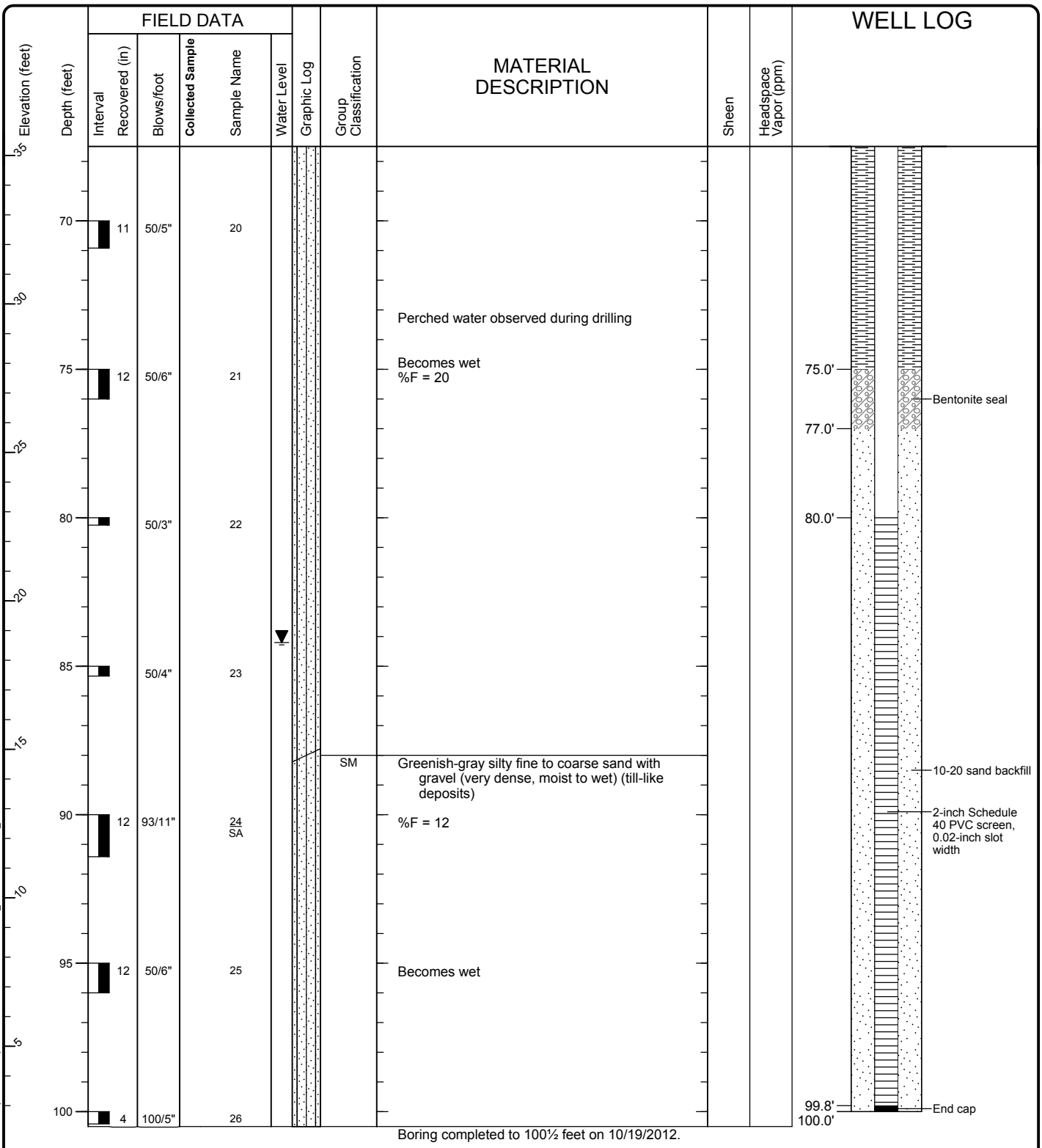
Log of Monitoring Well MW21-3 (continued)

GeoEngineers

Project:	Rufus 2.0 Development Block 21
Project Location:	Seattle, Washington
Project Number:	20434-001-11

Figure C-4
Sheet 2 of 3

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL



Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well MW21-3 (continued)

GeoEngineers

Project:	Rufus 2.0 Development Block 21
Project Location:	Seattle, Washington
Project Number:	20434-001-11

Figure C-4
Sheet 3 of 3

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL

Drilled	Start	End	Total Depth (ft)	Logged By	Driller	Drilling Method
	10/4/2012	10/4/2012	100.25	SLG LCF	Geologic Drill Exploration, Inc.	Hollow-Stem Auger

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
87 NAVD88	Automatic Hammer 140 (lbs) / 30 (in) Drop	Diedrich D50

Easting (X) Northing (Y)	System Datum	Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)

Notes: Elevations based on LiDAR contour data from Puget Sound LiDAR Consortium, 2009

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0								AC	3 inches asphalt concrete pavement			
									CR	Approximately 3 inches crushed rock			
85			6			1			CH	Grayish-brown clay (medium stiff, moist) (fill)			
			10	5		2 AL					NS	<1	
	5		15	5		3					NS	<1	
80			18	17		4 CA			SM	Brown silty sand with occasional gravel and oxidation staining (medium dense, moist)	NS	<1	
	10		12	14		5					NS	<1	Trace gravel at 11 feet per driller Charcoal fragments
75			18	15		6					NS	<1	
									ML	Brown silt with interbedded sandy silt layers (stiff, moist) (recent deposits)			
	15		18	22		7a			SM	Brown silty fine to medium sand (medium dense, moist)	NS	<1	
70						7b			SP-SM	Gray fine to medium sand with silt (medium dense, moist)			
			18	35		8 CA			SM	Grayish-brown silty fine to medium sand (dense, moist)	NS	<1	
	20		18	21		9a				%F = 30	NS	<1	
65						9b			SP-SM	Brown fine to medium sand with trace silt (medium dense, moist)			
			18	48		10			SP-SM	Grayish-brown fine to medium sand with silt (dense, moist) (cohesionless sand and gravel)	NS	<1	
	25		12	60		11 SA			SM	Grayish-brown silty fine sand (dense, moist) %F = 15	NS	<1	
60			18	81		12					NS	<1	
	30								SP-SM	Grayish-brown fine to medium sand with silt and gravel (very dense, moist)			

Note: See Figure A-1 for explanation of symbols.

Log of Boring B21-1

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-5
Sheet 1 of 3

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	30		12	50/6"		13					NS	<1	Driller noted easier drilling between 30 and 35 feet
55													
	35		18	62		14				Grades to with occasional gravel	NS	<1	
50									SM	Dark gray silty fine sand with occasional gravel and occasional cobbles (very dense, moist) (till-like deposits)			
	40		3	50/3"		15				%F = 38	NS	<1	Sampling on cobble
45									SM	Grayish-brown silty fine to medium sand with gravel and oxidation staining (very dense, moist)			
	45			50/6"		16					NS	<1	
40									GW-GM	Grayish-brown fine to coarse gravel with silt, sand, occasional cobbles and trace oxidation staining (very dense, moist to wet) (cohesionless sand and gravel)			
	50		6	50/6"		17 / SA				%F = 9	NS	<1	
35									SP-SM	Grayish-brown fine to coarse sand with silt and gravel and fine oxidized silty sand lenses (very dense, wet)			
	55		18	70		18 / SA				%F = 11	NS	<1	Perched water observed during drilling
30									SM	Brown silty fine to medium sand with oxidation staining (very dense, moist)			
	60		18	82/12"		19					NS	<1	
25									SP-SM	Brown fine sand with silt and oxidation staining (very dense, moist)			
	65			85/11"		20 / SA				%F = 12	NS	<1	

Note: See Figure A-1 for explanation of symbols.

Log of Boring B21-1 (continued)

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-5
Sheet 2 of 3

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample: Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
							GM	Brown silty fine to coarse gravel with sand and occasional cobbles (very dense, moist to wet)			
	70	3	50/3"	21					NS	<1	Gravels noted by driller at approximately 69½ feet
							ML	Brown silt with sand and heavy oxidation staining (hard, moist) (till-like deposits)			
	75	18	58	22					NS	<1	Driller began adding mud at 75 feet
							SM	Greenish-gray silty fine sand with occasional gravel (very dense, moist to wet)			
	80	9	50/3"	23 SA				%F = 43	NS	<1	
							GM	Greenish-gray silty fine to coarse gravel with sand (very dense, moist to wet)			
	85	4	50/6"	24					NS	<1	
							SM	Greenish-gray silty fine to coarse sand with gravel (very dense, moist to wet)			
	90	8	50/4"	25					NS	<1	Driller had difficulty adding next auger
	95	6	50/6"	26 SA				%F = 23	NS	<1	
	100	3	50/3"	27					NS	<1	
								Completed to 100¼ feet on 10/4/2012			

Note: See Figure A-1 for explanation of symbols.

Log of Boring B21-1 (continued)

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-5
Sheet 3 of 3

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled Start 10/11/2012 End 10/11/2012	Total Depth (ft) 100.5	Logged By SLG Checked By LCF	Driller Geologic Drill Exploration, Inc.	Drilling Method Hollow-Stem Auger
Surface Elevation (ft) 103 Vertical Datum NAVD88		Hammer Data Automatic Hammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D50
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft)

Notes: Elevations based on LiDAR contour data from Puget Sound LiDAR Consortium, 2009

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0								AC	3 inches asphalt concrete			
			12			1			ML	Gray sandy silt with charcoal fragments (stiff, moist) (fill)			
100			18	12		2							
	5		12	30		3 CA							With charcoal fragments
									CL	Grayish-brown clay (very stiff, moist) (recent deposits)			
95			18	29		4 AL							Fissured
	10		12	36		5			SP-SM	Gray fine to medium sand with silt and occasional gravel and cobbles (dense, moist) (cohesionless sand and gravel)			
90			18	48		6				%F = 7			
	15		18	48		7							
85			18	75/9"		8				Becomes very dense			
	20		17	76/11"		9 CA				%F = 7			
80													Driller noted gravel at 23 feet bgs
	25		18	75/12"		10							
75									SP-SM	Gray sand with silt and gravel and occasional cobbles (very dense, moist)			Driller noted rock in sampler shoe at 26 feet bgs
	30												

Note: See Figure A-1 for explanation of symbols.

Log of Boring B21-2

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-6
Sheet 1 of 3

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample: Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	30	16	94/10"	11							
70											
	35	6	50/6"	12			SM	Gray silty fine to coarse sand with gravel (very dense, moist) (till-like deposits)			
65											
	40	6	50/6"	13			SP-SM	Brown silty fine to medium sand with gravel, occasional cobbles/boulders and iron oxide staining (very dense, moist) (cohesionless sand and gravel)			Driller noted very difficult drilling from 45 to 49 feet Driller hits boulder at 46 feet
60											
	45	2	50/3"	14							
55							SP-SM	Orange-brown fine to medium sand with silt (very dense, moist) %F = 12			
	50	18	94/6"	15							
50											
	55	12	50/6"	16				Becomes wet %F = 10			Perched water observed during drilling
45							SM	Brown silty fine to medium sand with gravel (very dense, moist to wet)			
	60	6	50/6"	17							
40											
	65	3	50/3"	18 SA			GP	Brown fine to coarse gravel with sand and occasional cobbles (very dense, moist) %F = 4			Driller noted gravel at 64 feet Driller noted bouncing on rock at 65 feet

Note: See Figure A-1 for explanation of symbols.

Log of Boring B21-2 (continued)

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-6
Sheet 2 of 3

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample: Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
35											
	70	18	85	19			SP-SM	Brown fine to medium sand with silt (very dense, wet) %F = 8			
30											Water observed on drill rods
	75	18	50/6"	20							
25											
	80	18		21a				%F = 5			
			78/12"	21b			SM	Gray silty fine to medium sand with occasional gravel (very dense, wet) %F = 14			
20								Grades to grayish-brown			
	85	4	50/4"	22							Driller added water at 85 feet
15							SP-SM	Gray fine to medium sand with silt (very dense, wet)			
	90	10	50/4"	23				%F = 8			
10							SM	Greenish-gray silty fine to medium sand with gravel (very dense, wet) (till-like deposits)			
	95	11	50/5"	24							
5											
	100	6	90/6"	25							
								Boring completed at 100½ feet			

Note: See Figure A-1 for explanation of symbols.

Log of Boring B21-2 (continued)

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-6
Sheet 3 of 3

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
10/5/2012	10/5/2012	8	CDLV / CTB	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
83 / NAVD88	Not applicable	GeoProbe 54LT

Easting (X) / Northing (Y)	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
			Not encountered	

Notes: Drilled through 2200 7th Ave basement slab. Elevations based of review of 2200 7th Ave as-built plans and an assumed alley Elevation of 95 feet.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		24						CC	8 inches concrete			
									SP	1 inch sand (loose, moist)			
									SP	Brown sand with gravel (loose, moist)			
80						1			SM	Brown silty fine to medium sand with gravel (medium dense, moist) (fill)	NS	<1	
			48						ML	Brown silt with sand (stiff, moist) (recent deposits)			
	5					2					NS	<1	
75						3 CA					NS	<1	
										Refusal at 8 feet bgs			

Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-3

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-7
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
10/5/2012	10/5/2012	8	CDLV / CTB	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
83 / NAVD88	Not applicable	GeoProbe 54LT

Easting (X) / Northing (Y)	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
			Not encountered	

Notes: Drilled through 2200 7th Ave basement slab. Elevations based of review of 2200 7th Ave as-built plans and an assumed alley Elevation of 95 feet.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		48						CC	8 inches concrete			
									SP	1.5 inches sand (loose, moist)			
									SM	Brown silty sand with gravel (loose to medium dense, moist) (fill)			2 inches coarse gravel at 2 feet bgs
80						1					NS	<1	
			48						ML	Brown silt with sand (stiff, moist) (recent deposits)			
	5					2 CA					NS	<1	
75						3					NS	<1	
										Refusal at 8 feet bgs			

Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-4

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-8
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
10/5/2012	10/5/2012	7.5	CDLV / CTB	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
83 NAVD88	Not applicable	GeoProbe 54LT

Easting (X) / Northing (Y)	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
			Not encountered	

Notes: Drilled through 2200 7th Ave basement slab. Elevations based of review of 2200 7th Ave as-built plans and an assumed alley Elevation of 95 feet.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
80	0		36						CC	8 inches concrete			
									SP	1 inch sand (loose, moist)			
									SP	Brown-gray fine to coarse sand with gravel (loose, wet) (fill)			
						1			ML	Brown silt with sand (medium stiff, moist) (recent deposits)	NS	<1	
			42										
	5					2 CA					NS	<1	
						3					NS	<1	

Refusal on rock at 7.5 feet bgs

Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-5

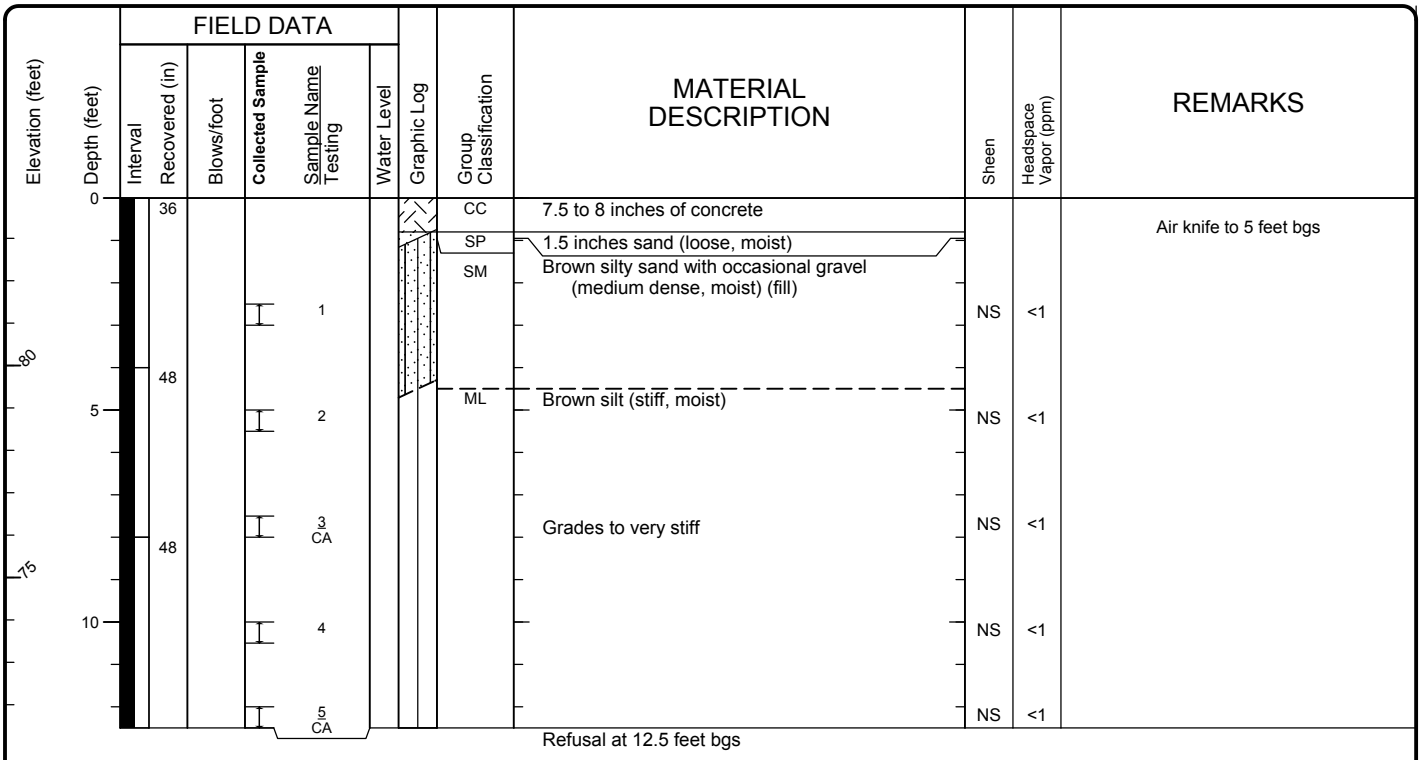
GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-9
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled Start 10/5/2012 End 10/5/2012	Total Depth (ft) 12.5	Logged By CDLV Checked By CTB	Driller Cascade Drilling, L.P.	Drilling Method Direct Push	
Surface Elevation (ft) 83.95 Vertical Datum NAVD88		Hammer Data Not applicable		Drilling Equipment GeoProbe 9060 Pro-D	
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft)	
Notes: Elevations based on LiDAR contour data from Puget Sound LiDAR Consortium, 2009				Not encountered	



Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-6

GeoEngineers

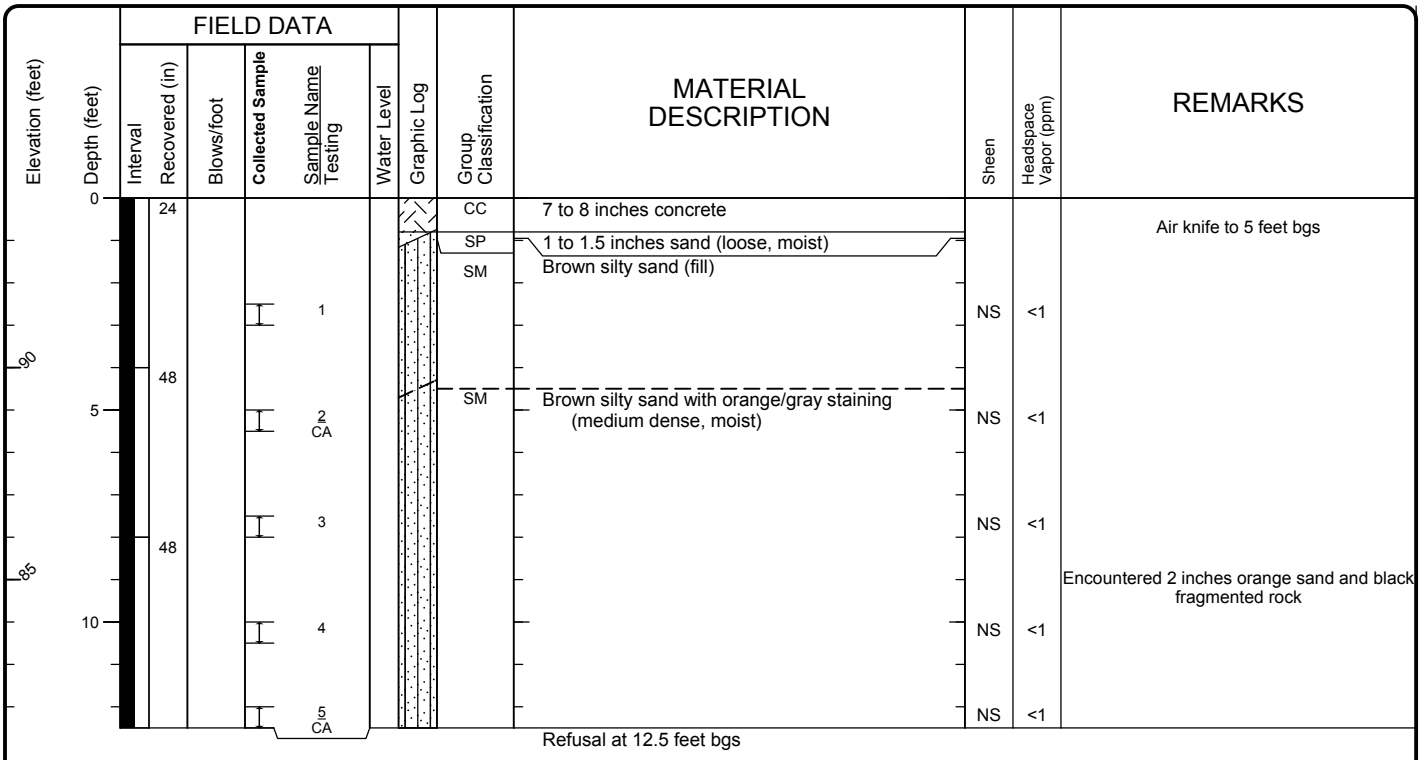
Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-10
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled Start 10/5/2012 End 10/5/2012	Total Depth (ft) 12.5	Logged By CDLV Checked By CTB	Driller Cascade Drilling, L.P.	Drilling Method Direct Push
Surface Elevation (ft) 94 Vertical Datum NAVD88		Hammer Data Not applicable		Drilling Equipment GeoProbe 9060 Pro-D
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft): Not encountered

Notes: Elevations based on LiDAR contour data from Puget Sound LiDAR Consortium, 2009



Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-7

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-11
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled Start 10/5/2012 End 10/5/2012	Total Depth (ft) 7	Logged By CDLV Checked By CTB	Driller Cascade Drilling, L.P.	Drilling Method Direct Push
Surface Elevation (ft) 100 Vertical Datum NAVD88		Hammer Data Not applicable		Drilling Equipment GeoProbe 9060 Pro-D
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft): Not encountered

Notes: Elevations based on LiDAR contour data from Puget Sound LiDAR Consortium, 2009

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		48						AC	1.5 inches asphalt			
									GP/SP	3 inches gravel with sand			
									ML	Gray silty fine to medium sand with gravel (medium dense, moist) (fill)			
						1					NS	<1	
									ML	Gray silt with sand and occasional gravel and iron-oxide staining (stiff, moist) (recent deposits)			
-95	5		36			2 CA					NS	<1	
						3					NS	<1	

Refusal at 7 feet bgs

Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-8

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-12
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
10/5/2012	10/5/2012	12	CDLV / CTB	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
83 / NAVD88	Not applicable	GeoProbe 54LT

Easting (X) / Northing (Y)	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
			Not encountered	

Notes: Drilled through 2200 7th Ave basement slab. Elevations based of review of 2200 7th Ave as-built plans and an assumed alley Elevation of 95 feet.

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		48						CC	7 inches concrete			
									SP	1 inch sand (loose, moist)			
									SM	Brown silty fine to medium sand with occasional gravel (medium dense, moist) (fill)			
80						1 CA							
			48						ML	Brown silt (stiff, moist) (recent deposits)			
	5					2							
75						3							
			48						SM	Brown fine to medium sand with silt (loose, moist)			
	10					4 CA			ML	Brown silt (very stiff, moist)			
						5							
										Refusal at 12 feet bgs			

Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-9

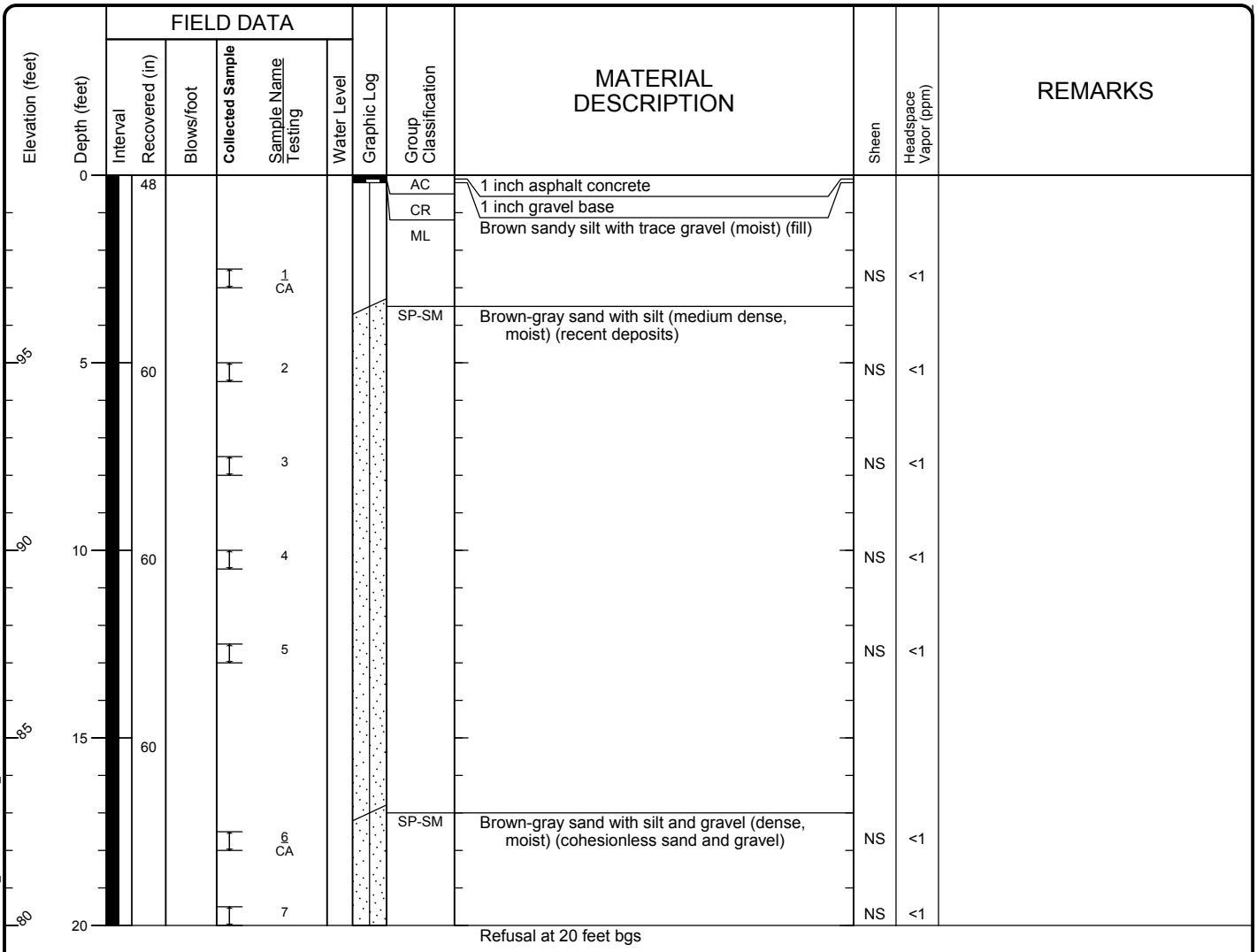
GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-13
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled	Start 10/8/2012	End 10/8/2012	Total Depth (ft)	20	Logged By CDLV / Checked By CTB	Driller	Cascade Drilling, L.P.	Drilling Method	Direct Push
Surface Elevation (ft) / Vertical Datum	100 NAVD88		Hammer Data	Not applicable		Drilling Equipment	GeoProbe 7730 DT		
Easting (X) / Northing (Y)			System Datum			Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)	
Notes: Elevations based on LiDAR contour data from Puget Sound LiDAR Consortium, 2009						Not encountered			



Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-10

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-14
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled	Start	End	Total Depth (ft)	Logged By	Checked By	Driller	Drilling Method
	10/8/2012	10/8/2012	20	CDLV	CTB	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
102 NAVD88	Not applicable	GeoProbe 7730 DT

Easting (X) / Northing (Y)	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
			Not encountered	

Notes: Elevations based on LiDAR contour data from Puget Sound LiDAR Consortium, 2009

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		48						AC	2 inches asphalt concrete			
									CR	1 inch crushed rock base course			
100									SM	Brown silty fine to medium sand with occasional gravel (medium dense, moist) (fill)			
						1 CA					NS	<1	
									ML	Brown silt (stiff, moist) (recent deposits)			
	5		60			2					NS	<1	
95										Occasional gravel			
						3					NS	<1	
	10		60			4 CA				Grades to gray	NS	<1	
90									SM	Gray-brown silty fine to medium sand (medium dense, moist)			
						5					NS	<1	
									ML	Brown-gray silt (very stiff, moist) (orange staining)			
	15		60			6					NS	<1	
									SM	Gray-brown silty fine to medium sand with occasional gravel (dense, moist) (cohesionless sand and gravel)			
85						7					NS	<1	
						8					NS	<1	
	20									Refusal at 20 feet bgs			

Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-11

GeoEngineers

Project: 2210 7th Avenue (Lot 3)
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-15
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled	Start	End	Total Depth (ft)	Logged By	Checked By	Driller	Drilling Method
	10/8/2012	10/8/2012	20	CDLV	CTB	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
98 NAVD88	Not applicable	GeoProbe 7730 DT

Easting (X) / Northing (Y)	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
			Not encountered	

Notes: Elevations based on LiDAR contour data from Puget Sound LiDAR Consortium, 2009

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0								AC	2 inches asphalt concrete			
									CR	1 inch crushed rock base course			
			48						ML	Brown/dark gray silt with sand (stiff, moist) (fill)			
95						1					NS	<1	
									CC	Concrete from 4 to 4.5 feet			
	5								ML	Brown silt with sand (stiff, moist) (recent deposits)			
			60			2 CA					NS	<1	
90									SP-SM	Brown fine to medium sand with silt and occasional gravel (medium dense, moist)			
	10												
			60			3					NS	<1	
85						5			SM	Brown silty fine to medium sand (medium dense, moist)	NS	<1	
	15												
			60			4					NS	<1	
80						6 CA					NS	<1	
	20					7					NS	<1	
										Refusal at 20 feet bgs			

Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-12

GeoEngineers

Project: 2210 7th Avenue (Lot 3)
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-16
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
10/8/2012	10/8/2012	20	CDLV / CTB	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
103 / NAVD88	Not applicable	GeoProbe 7730 DT

Easting (X) / Northing (Y)	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
			Not encountered	

Notes: Elevations based on LiDAR contour data from Puget Sound LiDAR Consortium, 2009

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0								AC	2 inches asphalt concrete			
									CR	1 inch crushed rock base course			
			48						ML	Gray silt (stiff, moist) (fill)			
100						1 CA					NS	<1	
									ML	Brown silt with sand (very stiff, moist)			
	5		60			2					NS	<1	
										Grades to stiff at 5.5 to 6 feet			
									SP-SM	Gray fine to medium sand with silt and occasional gravel (medium dense, moist) (cohesionless sand and gravel)			
95													
	10		60			3					NS	<1	
90						4					NS	<1	
										Grades to with gravel			
	15		60			5 CA					NS	<1	
										Grades to no gravel			
85						6					NS	<1	
						7					NS	<1	
	20									Refusal at 20 feet bgs			

Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-13

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-17
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
10/8/2012	10/8/2012	20	CDLV / CTB	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
89 / NAVD88	Not applicable	GeoProbe 7730 DT

Easting (X) / Northing (Y)	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
			Not encountered	

Notes: Elevations based on LiDAR contour data from Puget Sound LiDAR Consortium, 2009

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
85	0		54			1 CA			AC	2 inches asphalt concrete	NS	<1	
									CR	1 inch crushed rock base course			
									SM	Dark brown silty sand (medium dense, moist)			
	5		60			2				Grades to with occasional gravel	NS	<1	
80						3				Grades to moist to wet, loose	NS	<1	
	10		60			4					NS	<1	
75						5 CA			SP-SM	Brown-gray fine to medium sand with silt (medium dense, moist) (recent deposits)	NS	<1	
	15		60			6					NS	<1	
70						7				Grades to with fine gravel	NS	<1	
	20					8					NS	<1	
										Refusal at 20 feet bgs			

Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-14

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-18
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled	Start	End	Total Depth (ft)	Logged By	Driller	Drilling Method
	10/8/2012	10/8/2012	19	CDLV Checked By CTB	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
98 NAVD88	Not applicable	GeoProbe 7730 DT

Easting (X) Northing (Y)	System Datum	Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
			Not encountered	

Notes: Elevations based on LiDAR contour data from Puget Sound LiDAR Consortium, 2009

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0								AC	4 inches asphalt concrete			
									CR	1 inch crushed rock base course			
									SM	Brown silty sand with gravel (medium dense, moist)			
95			36			1					NS	<1	Occasional cobbles
	5		60			2 CA					NS	<1	
									SP-SM	Brown-gray fine to medium sand with silt (medium dense, moist) (recent deposits)			
90						3					NS	<1	
	10		60			4					NS	<1	
85						5 CA					NS	<1	
	15		48			6					NS	<1	
						7			SP-SM	Brown-gray fine to medium sand with silt and gravel (dense, moist) (cohesionless sand and gravel)	NS	<1	
80						8					NS	<1	
										Refusal at 19 feet bgs			

Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-15

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-19
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled Start 10/5/2012 End 10/5/2012	Total Depth (ft) 20	Logged By CDLV Checked By CTB	Driller Cascade Drilling, L.P.	Drilling Method Direct Push
Surface Elevation (ft) 98 Vertical Datum NAVD88		Hammer Data Not applicable		Drilling Equipment GeoProbe 7730 DT
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft): Not encountered
Notes: Elevations based on LiDAR contour data from Puget Sound LiDAR Consortium, 2009				

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		48						AC	2 inches asphalt concrete			
									CR	1 inch crushed rock base course			
95						1 CA			SM	Brown silty sand with gravel (medium dense, moist) (fill)	NS	<1	
	5		60			2			SP-SM	Brown-gray fine to medium sand with silt (medium dense, moist) (recent deposits)	NS	<1	
90						3					NS	<1	
	10		60			4 CA					NS	<1	
85						5					NS	<1	
	15		60			6			SP-SM	Brown-gray fine to medium sand with silt and gravel (dense, moist) (cohesionless sand and gravel)	NS	<1	
80						7					NS	<1	
	20					8					NS	<1	
										Refusal at 20 feet bgs			

Note: See Figure A-1 for explanation of symbols.

Log of Direct Push B21-16

GeoEngineers

Project: Rufus 2.0 Development Block 21
Project Location: Seattle, Washington
Project Number: 20434-001-11

Figure C-20
Sheet 1 of 1

Seattle: Date:11/14/12 Path:C:\USERS\CVOSS\DESKTOP\20434001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

20434-001-11

CEMEX

1876060097

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213

Location: 187

Order: Dispatch: **Date:** 10/08/2012
Ship To: 3047613 - GEOENGINEERS INC
7TH AVE & BELL ST SEATTLE
TO EVERETT SOILS
EVERETT, WA 98213
Instruct: 10.05.2012

Job #: **PO:** 2043400111
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2179765 - AQUA,AQUA CLEAN
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 0.23 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Malia J. Leake
Scale: 0
In:
Out: 7:24 am

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tre
Gross:	44,280	22.14	20 0
Tare:	43,820	21.91	9 8
Net:	460	0.23	0 2

* Manual Weight

Today Loads:
Today Qty: 0.23 to
0 0

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

0.0

Signature of Receiving Agent Driver

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

20434-001-11

CEMEX

1876060114

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213

Location: 187

Order: Dispatch: **Date:** 10/09/2012
Ship To: 3047613 - GEOENGINEERS INC
7TH AVE & BELL ST SEATTLE
TO EVERETT SOILS
EVERETT, WA 98213
Instruct: AQUACLEAN
AFTER HRS 10.08.2012

Job #: **PO:** 2043400111
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2034264 - 1876-2, EVERETT SOIL GENERIC
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 0.11 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Malia J. Leake
Scale: 0
In:
Out: 1:13 pm

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tre
Gross:	43,580	21.79	9 7
Tare:	43,360	21.68	9 6
Net:	220	0.11	0 1

* Manual Weight

Today Loads:
Today Qty: 0.11 to
0 0

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

0.0

Signature of Receiving Agent Driver

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

FIELD ENVIRONMENTAL INSTRUMENTS, INC.
www.fieldenvironmental.com

99 Miller Avenue
Braddock, PA 15104
(800) 393-4009 Toll Free
(412) 271-9050 Fax

PT2X Submersible Temperature/Pressure Transmitter

DESCRIPTION

The AquiStar® PT2X submersible pressure transmitter represents the latest in state-of-the-art level measurement technology. Building on years of successful experience, this industry standard digital RS485 interface device offers great noise immunity, thermal performance and transient protection. In addition, this device stores over 130,000 records of pressure, temperature and time data, operates with low power, and features easy to use software with powerful features. The transmitter's end cone is interchangeable with a 1/4" NPT inlet which allows for increased application use and easy hookup. The modular designed AquiStar® PT2X can be factory serviced and repaired saving on future upgrade and repair costs.

OPERATION

The PT2X is powered internally with two AA batteries or with an auxiliary power supply for data intensive applications. At the rate of four measurements per hour, the unit will run for a year on its internal AA batteries. The PT2X comes with powerful, easy-to-use, Windows®-based Aqua4Plus software, affording the user extensive control, including real time monitoring, flexible programming, easy field calibration, and a delayed start feature. Aqua4Palm is available for Palm®-based handhelds (available for rental), allowing the user to create test sessions, examine data, and monitor real time readings with the convenience and portability of a PDA.

APPLICATIONS

Due to its rugged construction, proven reliability, and datalogging capability, the AquiStar® PT2X can be used to replace analog sensors with separate dataloggers. Units can be used to monitor groundwater, well, tank and tidal levels, as well as for pump testing and flow monitoring.

FEATURES

- RS485/RS232 interface
- Small diameter
- Pressure, temperature & time
- 130,000+ records / non-volatile
- 316 stainless steel, Viton and Teflon construction
- Polyethylene, Polyurethane and FEP Teflon cable options
- Cableless version available
- MODBUS® protocol for RTU & PLC applications
- Easy export to spreadsheets & databases



SPECIFICATIONS

MECHANICAL

TRANSMITTER

Body Material	316 stainless steel
Wire Seal Materials	Viton and Teflon
Desiccant	High- and standard- capacity packs
Terminating Connector	Available
Weight	0.80 lbs.

CABLE

Outer-Diameter	0.28" maximum
Break Strength	138 lbs.
Maximum Length	2000 feet
Weight	4 lbs. per 100 feet

ELECTRICAL

PRESSURE

Static Accuracy (B.F.S.L. 25° C)*	±0.1% FSO (maximum) ±0.06% FSO (typical) *0.06% available on request.*
Temperature Error (reference 25° C)	±0.5% FSO (maximum) ±0.25% FSO (typical)
Maximum Zero Offset	±0.25% FSO (at 25° C)
Resolution	16 bit
Over Range Protection	2x (except 300 PSIA)
Temperature Accuracy	±0.75° C (maximum)
Resolution	0.1° C

TIME

Accuracy	±4 min/yr (maximum) ±2 min/yr (typical)
Recommended Operating Temperature Range	0° C to 40° C

APPENDIX D
Chemical Analytical Program

APPENDIX D
CHEMICAL ANALYTICAL PROGRAM

Analytical Methods

Chain-of-custody procedures were followed during the transport of the field samples to the analytical laboratory. The samples were held in cold storage pending extraction and/or analysis. The analytical results, analytical methods reference and laboratory quality control (QC) records are included in this appendix. The analytical results are also summarized in the text and tables of this report.

Analytical Data Review

The laboratory maintains an internal quality assurance 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 validity of 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. Data quality exceptions documented by the accredited laboratory were reviewed by GeoEngineers and are addressed in the data quality exception section of this appendix.

Analytical Data Review Summary

No data quality exceptions were noted during our review of the analytical data reports provided to us by the laboratory. Based on review of the analytical data, and with these qualifiers, it is our opinion that the analytical data are of acceptable quality for their intended use.

1311 N. 35th St.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

GeoEngineers, Inc. - Redmond
Chris Brown
8410 154th Ave. NE
Redmond, Washington 98052

RE: Rufus 2.0 WO11
Lab ID: 1210020

October 23, 2012

Attention Chris Brown:

Fremont Analytical, Inc. received 198 sample(s) on 10/15/2012 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Gasoline by NWTPH-Gx
Mercury by EPA Method 7471
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020
Volatile Organic Compounds by EPA Method 8260

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Michael Dee
Sr. Chemist / Principal

CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11
Lab Order: 1210020

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1210020-001	B21-3-2.5	10/05/2012 8:37 AM	10/05/2012 4:08 PM
1210020-002	B21-3-5.0	10/05/2012 9:30 AM	10/05/2012 4:08 PM
1210020-003	B21-3-7.5	10/05/2012 9:33 AM	10/05/2012 4:08 PM
1210020-013	B21-4-2.5	10/05/2012 9:40 AM	10/05/2012 4:08 PM
1210020-014	B21-4-5.0	10/05/2012 9:42 AM	10/05/2012 4:08 PM
1210020-015	B21-4-7.5	10/05/2012 9:50 AM	10/05/2012 4:08 PM
1210020-025	B21-5-2.5	10/05/2012 10:05 AM	10/05/2012 4:08 PM
1210020-026	B21-5-5.0	10/05/2012 10:10 AM	10/05/2012 4:08 PM
1210020-027	B21-5-7.5	10/05/2012 10:25 AM	10/05/2012 4:08 PM
1210020-037	B21-6-2.5	10/05/2012 11:30 AM	10/05/2012 4:08 PM
1210020-038	B21-6-5.0	10/05/2012 11:33 AM	10/05/2012 4:08 PM
1210020-039	B21-6-7.5	10/05/2012 11:45 AM	10/05/2012 4:08 PM
1210020-040	B21-6-10.0	10/05/2012 11:50 AM	10/05/2012 4:08 PM
1210020-041	B21-6-12.5	10/05/2012 11:55 AM	10/05/2012 4:08 PM
1210020-049	B21-7-2.5	10/05/2012 12:16 PM	10/05/2012 4:08 PM
1210020-050	B21-7-5.0	10/05/2012 12:20 PM	10/05/2012 4:08 PM
1210020-051	B21-7-7.5	10/05/2012 12:23 PM	10/05/2012 4:08 PM
1210020-052	B21-7-10.0	10/05/2012 12:35 PM	10/05/2012 4:08 PM
1210020-053	B21-7-12.5	10/05/2012 12:40 PM	10/05/2012 4:08 PM
1210020-061	B21-8-2.5	10/05/2012 1:20 PM	10/05/2012 4:08 PM
1210020-062	B21-8-5.0	10/05/2012 1:24 PM	10/05/2012 4:08 PM
1210020-063	B21-8-7.5	10/05/2012 1:30 PM	10/05/2012 4:08 PM
1210020-073	B21-9-2.5	10/05/2012 2:15 PM	10/05/2012 4:08 PM
1210020-074	B21-9-5.0	10/05/2012 2:20 PM	10/05/2012 4:08 PM
1210020-075	B21-9-7.5	10/05/2012 2:30 PM	10/05/2012 4:08 PM
1210020-076	B21-9-10.0	10/05/2012 2:35 PM	10/05/2012 4:08 PM
1210020-077	B21-9-12.5	10/05/2012 2:38 PM	10/05/2012 4:08 PM
1210020-085	B21-10-2.5	10/08/2012 8:55 AM	10/08/2012 5:09 PM
1210020-086	B21-10-5.0	10/08/2012 8:58 AM	10/08/2012 5:09 PM
1210020-087	B21-10-7.5	10/08/2012 9:00 AM	10/08/2012 5:09 PM
1210020-088	B21-10-10.0	10/08/2012 9:05 AM	10/08/2012 5:09 PM
1210020-089	B21-10-12.5	10/08/2012 9:10 AM	10/08/2012 5:09 PM
1210020-090	B21-10-15.0	10/08/2012 9:15 AM	10/08/2012 5:09 PM
1210020-091	B21-10-17.5	10/08/2012 9:20 AM	10/08/2012 5:09 PM
1210020-092	B21-10-20.0	10/08/2012 9:24 AM	10/08/2012 5:09 PM
1210020-097	B21-11-2.5	10/08/2012 9:50 AM	10/08/2012 5:09 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT:	GeoEngineers, Inc. - Redmond	**Work Order Sample Summary**	
Project:	Rufus 2.0 WO11		
Lab Order:	1210020		

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1210020-098	B21-11-5.0	10/08/2012 9:53 AM	10/08/2012 5:09 PM
1210020-099	B21-11-7.5	10/08/2012 9:55 AM	10/08/2012 5:09 PM
1210020-100	B21-11-10.0	10/08/2012 10:00 AM	10/08/2012 5:09 PM
1210020-101	B21-11-12.5	10/08/2012 10:02 AM	10/08/2012 5:09 PM
1210020-102	B21-11-15.0	10/08/2012 10:05 AM	10/08/2012 5:09 PM
1210020-103	B21-11-17.5	10/08/2012 10:10 AM	10/08/2012 5:09 PM
1210020-104	B21-11-20.0	10/08/2012 10:15 AM	10/08/2012 5:09 PM
1210020-109	B21-12-2.5	10/08/2012 10:35 AM	10/08/2012 5:09 PM
1210020-110	B21-12-5.0	10/08/2012 10:40 AM	10/08/2012 5:09 PM
1210020-111	B21-12-7.5	10/08/2012 10:45 AM	10/08/2012 5:09 PM
1210020-112	B21-12-10.0	10/08/2012 10:50 AM	10/08/2012 5:09 PM
1210020-113	B21-12-12.5	10/08/2012 11:00 AM	10/08/2012 5:09 PM
1210020-114	B21-12-15.0	10/08/2012 11:05 AM	10/08/2012 5:09 PM
1210020-115	B21-12-17.5	10/08/2012 11:10 AM	10/08/2012 5:09 PM
1210020-116	B21-12-20.0	10/08/2012 11:15 AM	10/08/2012 5:09 PM
1210020-121	B21-13-2.5	10/08/2012 12:05 PM	10/08/2012 5:09 PM
1210020-122	B21-13-5.0	10/08/2012 12:08 PM	10/08/2012 5:09 PM
1210020-123	B21-13-7.5	10/08/2012 12:10 PM	10/08/2012 5:09 PM
1210020-124	B21-13-10.0	10/08/2012 12:12 PM	10/08/2012 5:09 PM
1210020-125	B21-13-12.5	10/08/2012 12:15 PM	10/08/2012 5:09 PM
1210020-126	B21-13-15.0	10/08/2012 12:18 PM	10/08/2012 5:09 PM
1210020-127	B21-13-17.5	10/08/2012 12:20 PM	10/08/2012 5:09 PM
1210020-128	B21-13-20.0	10/08/2012 12:25 PM	10/08/2012 5:09 PM
1210020-133	B21-14-2.5	10/08/2012 1:25 PM	10/08/2012 5:09 PM
1210020-134	B21-14-5.0	10/08/2012 1:30 PM	10/08/2012 5:09 PM
1210020-135	B21-14-7.5	10/08/2012 1:33 PM	10/08/2012 5:09 PM
1210020-136	B21-14-10.0	10/08/2012 1:35 PM	10/08/2012 5:09 PM
1210020-137	B21-14-12.5	10/08/2012 1:40 PM	10/08/2012 5:09 PM
1210020-138	B21-14-15.0	10/08/2012 1:45 PM	10/08/2012 5:09 PM
1210020-139	B21-14-17.5	10/08/2012 1:47 PM	10/08/2012 5:09 PM
1210020-140	B21-14-20.0	10/08/2012 1:50 PM	10/08/2012 5:09 PM
1210020-145	B21-15-2.5	10/08/2012 2:25 PM	10/08/2012 5:09 PM
1210020-146	B21-15-5.0	10/08/2012 2:30 PM	10/08/2012 5:09 PM
1210020-147	B21-15-7.5	10/08/2012 2:33 PM	10/08/2012 5:09 PM
1210020-148	B21-15-10.0	10/08/2012 2:35 PM	10/08/2012 5:09 PM
1210020-149	B21-15-12.5	10/08/2012 2:40 PM	10/08/2012 5:09 PM
1210020-150	B21-15-15.0	10/08/2012 2:42 PM	10/08/2012 5:09 PM
1210020-151	B21-15-17.5	10/08/2012 2:43 PM	10/08/2012 5:09 PM
1210020-157	B21-16-2.5	10/08/2012 3:15 PM	10/08/2012 5:09 PM
1210020-158	B21-16-5.0	10/08/2012 3:17 PM	10/08/2012 5:09 PM
1210020-159	B21-16-7.5	10/08/2012 3:20 PM	10/08/2012 5:09 PM
1210020-160	B21-16-10.0	10/08/2012 3:25 PM	10/08/2012 5:09 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT:	GeoEngineers, Inc. - Redmond	**Work Order Sample Summary**	
Project:	Rufus 2.0 WO11		
Lab Order:	1210020		

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1210020-161	B21-16-12.5	10/08/2012 3:27 PM	10/08/2012 5:09 PM
1210020-162	B21-16-15.0	10/08/2012 3:30 PM	10/08/2012 5:09 PM
1210020-163	B21-16-17.5	10/08/2012 3:35 PM	10/08/2012 5:09 PM
1210020-164	B21-16-20.0	10/08/2012 3:45 PM	10/08/2012 5:09 PM
1210020-217	MW21-1-2.5	10/10/2012 8:19 AM	10/10/2012 1:05 PM
1210020-218	MW21-1-5.0	10/10/2012 8:25 AM	10/10/2012 1:05 PM
1210020-219	MW21-1-7.5	10/10/2012 8:31 AM	10/10/2012 1:05 PM
1210020-220	MW21-1-10.0	10/10/2012 8:35 AM	10/10/2012 1:05 PM
1210020-221	MW21-1-12.5	10/10/2012 8:42 AM	10/10/2012 1:05 PM
1210020-222	MW21-1-15.0	10/10/2012 8:50 AM	10/10/2012 1:05 PM
1210020-223	MW21-1-17.5	10/10/2012 8:55 AM	10/10/2012 1:05 PM
1210020-224	MW21-1-20.0	10/10/2012 9:04 AM	10/10/2012 1:05 PM
1210020-226	MW21-1-25.0	10/10/2012 9:15 AM	10/10/2012 1:05 PM
1210020-228	MW21-1-30.0	10/10/2012 9:26 AM	10/10/2012 1:05 PM
1210020-229	MW21-2-2.5	10/08/2012 8:20 AM	10/08/2012 5:09 PM
1210020-230	MW21-2-5.0	10/08/2012 8:25 AM	10/08/2012 5:09 PM
1210020-231	MW21-2-7.5	10/08/2012 8:37 AM	10/08/2012 5:09 PM
1210020-232	MW21-2-10.0	10/08/2012 8:41 AM	10/08/2012 5:09 PM
1210020-233	MW21-2-12.5	10/08/2012 8:55 AM	10/08/2012 5:09 PM
1210020-235	MW21-2-17.5	10/08/2012 9:14 AM	10/08/2012 5:09 PM
1210020-236	MW21-2-20.0	10/08/2012 9:23 AM	10/08/2012 5:09 PM
1210020-237	MW21-2-22.5	10/08/2012 9:31 AM	10/08/2012 5:09 PM
1210020-238	MW21-2-25.0	10/08/2012 9:40 AM	10/08/2012 5:09 PM
1210020-239	MW21-2-27.5	10/08/2012 9:45 AM	10/08/2012 5:09 PM
1210020-240	MW21-2-30.0	10/08/2012 9:51 AM	10/08/2012 5:09 PM
1210020-241	MW21-3-2.5	10/09/2012 8:12 AM	10/09/2012 4:37 PM
1210020-242	MW21-3-5.0	10/09/2012 8:19 AM	10/09/2012 4:37 PM
1210020-243	MW21-3-7.5	10/09/2012 8:28 AM	10/09/2012 4:37 PM
1210020-244	MW21-3-10.0	10/09/2012 8:35 AM	10/09/2012 4:37 PM
1210020-245	MW21-3-12.5	10/09/2012 8:40 AM	10/09/2012 4:37 PM
1210020-246	MW21-3-15.0	10/09/2012 8:48 AM	10/09/2012 4:37 PM
1210020-247	MW21-3-17.5	10/09/2012 8:55 AM	10/09/2012 4:37 PM
1210020-248	MW21-3-20.0	10/09/2012 9:02 AM	10/09/2012 4:37 PM
1210020-250	MW21-3-25.0	10/09/2012 9:18 AM	10/09/2012 4:37 PM
1210020-252	MW21-3-30.0	10/09/2012 9:31 AM	10/09/2012 4:37 PM
1210020-253	B21-1-2.5	10/04/2012 8:32 AM	10/04/2012 4:20 PM
1210020-254	B21-1-5.0	10/04/2012 8:37 AM	10/04/2012 4:20 PM
1210020-255	B21-1-7.5	10/04/2012 8:43 AM	10/04/2012 4:20 PM
1210020-256	B21-1-10.0	10/04/2012 8:46 AM	10/04/2012 4:20 PM
1210020-257	B21-1-12.5	10/04/2012 8:50 AM	10/04/2012 4:20 PM
1210020-258	B21-1-15.0	10/04/2012 8:55 AM	10/04/2012 4:20 PM
1210020-259	B21-1-17.5	10/04/2012 9:00 AM	10/04/2012 4:20 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT:	GeoEngineers, Inc. - Redmond	**Work Order Sample Summary**	
Project:	Rufus 2.0 WO11		
Lab Order:	1210020		

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1210020-260	B21-1-20.0	10/04/2012 9:05 AM	10/04/2012 4:20 PM
1210020-261	B21-1-22.5	10/04/2012 9:10 AM	10/04/2012 4:20 PM
1210020-262	B21-1-25.0	10/04/2012 9:11 AM	10/04/2012 4:20 PM
1210020-263	B21-1-27.5	10/04/2012 9:17 AM	10/04/2012 4:20 PM
1210020-264	B21-1-30.0	10/04/2012 9:31 AM	10/04/2012 4:20 PM
1210020-265	B21-2-2.5	10/11/2012 8:05 AM	10/11/2012 2:00 PM
1210020-266	B21-2-5.0	10/11/2012 8:15 AM	10/11/2012 2:00 PM
1210020-267	B21-2-7.5	10/11/2012 8:20 AM	10/11/2012 2:00 PM
1210020-268	B21-2-10.0	10/11/2012 8:25 AM	10/11/2012 2:00 PM
1210020-269	B21-2-12.5	10/11/2012 8:35 AM	10/11/2012 2:00 PM
1210020-270	B21-2-15.0	10/11/2012 8:40 AM	10/11/2012 2:00 PM
1210020-271	B21-2-17.5	10/11/2012 8:45 AM	10/11/2012 2:00 PM
1210020-272	B21-2-20.0	10/11/2012 8:54 AM	10/11/2012 2:00 PM
1210020-274	B21-2-25.0	10/11/2012 9:05 AM	10/11/2012 2:00 PM
1210020-276	B21-2-30.0	10/11/2012 9:12 AM	10/11/2012 2:00 PM
1210020-277	MW21-1-35.0	10/10/2012 9:36 AM	10/10/2012 1:05 PM
1210020-279	MW21-1-45.0	10/10/2012 9:53 AM	10/10/2012 1:05 PM
1210020-280	MW21-1-50.0	10/10/2012 10:10 AM	10/10/2012 1:05 PM
1210020-281	MW21-1-55.0	10/10/2012 10:15 AM	10/10/2012 1:05 PM
1210020-282	MW21-1-60.0	10/10/2012 10:30 AM	10/10/2012 1:05 PM
1210020-284	MW21-1-70.0	10/10/2012 10:50 AM	10/10/2012 1:05 PM
1210020-285	MW21-1-75.0	10/10/2012 10:59 AM	10/10/2012 1:05 PM
1210020-286	MW21-1-80.0	10/10/2012 11:16 AM	10/10/2012 1:05 PM
1210020-287	MW21-1-85.0	10/10/2012 11:33 AM	10/10/2012 1:05 PM
1210020-289	MW21-1-95.0	10/10/2012 12:00 PM	10/10/2012 1:05 PM
1210020-293	MW21-2-35.0	10/08/2012 9:57 AM	10/08/2012 5:09 PM
1210020-294	MW21-2-40.0	10/08/2012 10:04 AM	10/08/2012 5:09 PM
1210020-295	MW21-2-45.0	10/08/2012 10:12 AM	10/08/2012 5:09 PM
1210020-296	MW21-2-50.0	10/08/2012 10:20 AM	10/08/2012 5:09 PM
1210020-297	MW21-2-55.0	10/08/2012 10:33 AM	10/08/2012 5:09 PM
1210020-298	MW21-2-60.0	10/08/2012 10:45 AM	10/08/2012 5:09 PM
1210020-299	MW21-2-65.0	10/08/2012 10:57 AM	10/08/2012 5:09 PM
1210020-300	MW21-2-70.0	10/08/2012 11:06 AM	10/08/2012 5:09 PM
1210020-302	MW21-2-80.0	10/08/2012 11:30 AM	10/08/2012 5:09 PM
1210020-303	MW21-2-85.0	10/08/2012 11:44 AM	10/08/2012 5:09 PM
1210020-304	MW21-2-90.0	10/08/2012 12:00 PM	10/08/2012 5:09 PM
1210020-305	MW21-2-95.0	10/08/2012 12:06 PM	10/08/2012 5:09 PM
1210020-306	MW21-2-100	10/08/2012 12:37 PM	10/08/2012 5:09 PM
1210020-307	MW21-2-105	10/08/2012 12:55 PM	10/08/2012 5:09 PM
1210020-308	MW21-2-110	10/08/2012 1:20 PM	10/08/2012 5:09 PM
1210020-309	MW21-3-35.0	10/09/2012 9:42 AM	10/09/2012 4:37 PM
1210020-311	MW21-3-45.0	10/09/2012 10:25 AM	10/09/2012 4:37 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11
Lab Order: 1210020

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1210020-312	MW21-3-50.0	10/09/2012 10:40 AM	10/09/2012 4:37 PM
1210020-313	MW21-3-55.0	10/09/2012 11:01 AM	10/09/2012 4:37 PM
1210020-314	MW21-3-60.0	10/09/2012 11:33 AM	10/09/2012 4:37 PM
1210020-315	MW21-3-65.0	10/09/2012 11:44 AM	10/09/2012 4:37 PM
1210020-316	MW21-3-70.0	10/09/2012 12:01 PM	10/09/2012 4:37 PM
1210020-317	MW21-3-75.0	10/09/2012 12:17 PM	10/09/2012 4:37 PM
1210020-318	MW21-3-80.0	10/09/2012 12:30 PM	10/09/2012 4:37 PM
1210020-320	MW21-3-90.0	10/09/2012 12:50 PM	10/09/2012 4:37 PM
1210020-321	MW21-3-95.0	10/09/2012 1:05 PM	10/09/2012 4:37 PM
1210020-322	MW21-3-100	10/09/2012 1:20 PM	10/09/2012 4:37 PM
1210020-325	B21-1-35.0	10/04/2012 9:38 AM	10/04/2012 4:20 PM
1210020-326	B21-1-40.0	10/04/2012 9:50 AM	10/04/2012 4:20 PM
1210020-327	B21-1-45.0	10/04/2012 10:00 AM	10/04/2012 4:20 PM
1210020-328	B21-1-50.0	10/04/2012 10:12 AM	10/04/2012 4:20 PM
1210020-329	B21-1-55.0	10/04/2012 10:24 AM	10/04/2012 4:20 PM
1210020-330	B21-1-60.0	10/04/2012 10:35 AM	10/04/2012 4:20 PM
1210020-331	B21-1-65.0	10/04/2012 10:45 AM	10/04/2012 4:20 PM
1210020-332	B21-1-70.0	10/04/2012 11:00 AM	10/04/2012 4:20 PM
1210020-333	B21-1-75.0	10/04/2012 11:17 AM	10/04/2012 4:20 PM
1210020-334	B21-1-80.0	10/04/2012 11:35 AM	10/04/2012 4:20 PM
1210020-335	B21-1-85.0	10/04/2012 11:52 AM	10/04/2012 4:20 PM
1210020-336	B21-1-90.0	10/04/2012 12:10 PM	10/04/2012 4:20 PM
1210020-337	B21-1-95.0	10/04/2012 12:30 PM	10/04/2012 4:20 PM
1210020-338	B21-1-100	10/04/2012 12:35 PM	10/04/2012 4:20 PM
1210020-341	B21-2-35.0	10/11/2012 9:20 AM	10/11/2012 2:00 PM
1210020-342	B21-2-40.0	10/11/2012 9:26 AM	10/11/2012 2:00 PM
1210020-344	B21-2-50.0	10/11/2012 10:09 AM	10/11/2012 2:00 PM
1210020-345	B21-2-55.0	10/11/2012 10:20 AM	10/11/2012 2:00 PM
1210020-346	B21-2-60.0	10/11/2012 10:30 AM	10/11/2012 2:00 PM
1210020-348	B21-2-70.0	10/11/2012 10:58 AM	10/11/2012 2:00 PM
1210020-349	B21-2-75.0	10/11/2012 11:45 AM	10/11/2012 2:00 PM
1210020-350	B21-2-80.0	10/11/2012 11:56 AM	10/11/2012 2:00 PM
1210020-351	B21-2-85.0	10/11/2012 12:15 PM	10/11/2012 2:00 PM
1210020-352	B21-2-90.0	10/11/2012 12:23 PM	10/11/2012 2:00 PM
1210020-353	B21-2-95.0	10/11/2012 12:30 PM	10/11/2012 2:00 PM
1210020-354	B21-2-100	10/11/2012 12:45 PM	10/11/2012 2:00 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **1210020**
Date: **10/23/2012**

CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

I. SAMPLE RECEIPT:
All samples were received intact. The internal ice chest temperatures were measured on receipt and are recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/5/2012 9:33:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-003 **Matrix:** Soil

Client Sample ID: B21-3-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	25.7		mg/Kg-dry	1	10/17/2012 5:14:00 AM
Heavy Oil	ND	64.2		mg/Kg-dry	1	10/17/2012 5:14:00 AM
Surr: 2-Fluorobiphenyl	103	50-150		%REC	1	10/17/2012 5:14:00 AM
Surr: o-Terphenyl	104	50-150		%REC	1	10/17/2012 5:14:00 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3447		Analyst: PH
Naphthalene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
2-Methylnaphthalene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
1-Methylnaphthalene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Acenaphthylene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Acenaphthene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Fluorene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Phenanthrene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Anthracene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Fluoranthene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Pyrene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Benz(a)anthracene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Chrysene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Benzo(b)fluoranthene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Benzo(k)fluoranthene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Benzo(a)pyrene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Indeno(1,2,3-cd)pyrene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Dibenz(a,h)anthracene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Benzo(g,h,i)perylene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Surr: 2-Fluorobiphenyl	90.3	50.4-142		%REC	1	10/18/2012 5:40:00 PM
Surr: Terphenyl-d14 (surr)	109	48.8-157		%REC	1	10/18/2012 5:40:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.92		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 3:13:00 AM
Surr: Fluorobenzene	98.8	65-135		%REC	1	10/16/2012 3:13:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 9:33:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-003
Matrix: Soil
Client Sample ID: B21-3-7.5

Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439 Analyst: EM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0711		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Chloromethane	ND	0.0711		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Vinyl chloride	ND	0.00237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Bromomethane	ND	0.107		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Chloroethane	ND	0.0711		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1-Dichloroethene	ND	0.0592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Methylene chloride	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
trans-1,2-Dichloroethene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1-Dichloroethane	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
2,2-Dichloropropane	ND	0.0592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
cis-1,2-Dichloroethene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Chloroform	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1-Dichloropropene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Carbon tetrachloride	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2-Dichloroethane	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Benzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Trichloroethene (TCE)	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2-Dichloropropane	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Bromodichloromethane	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Dibromomethane	ND	0.0474		mg/Kg-dry	1	10/16/2012 3:13:00 AM
cis-1,3-Dichloropropene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Toluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
trans-1,3-Dichloropropene	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1,2-Trichloroethane	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,3-Dichloropropane	ND	0.0592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Tetrachloroethene (PCE)	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Dibromochloromethane	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2-Dibromoethane (EDB)	ND	0.00592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Chlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Ethylbenzene	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
m,p-Xylene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/5/2012 9:33:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-003 **Matrix:** Soil

Client Sample ID: B21-3-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Styrene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Isopropylbenzene	ND	0.0948		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Bromoform	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
n-Propylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Bromobenzene	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,3,5-Trimethylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
2-Chlorotoluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
4-Chlorotoluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
tert-Butylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2,3-Trichloropropane	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2,4-Trichlorobenzene	ND	0.0592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
sec-Butylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
4-Isopropyltoluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,3-Dichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,4-Dichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
n-Butylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2-Dichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2,4-Trimethylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Hexachlorobutadiene	ND	0.118		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Naphthalene	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2,3-Trichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/16/2012 3:13:00 AM
Surr: Dibromofluoromethane	98.6	67.6-119		%REC	1	10/16/2012 3:13:00 AM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/16/2012 3:13:00 AM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	5.04	0.104		mg/Kg-dry	1	10/16/2012 9:15:48 PM
Barium	160	0.521		mg/Kg-dry	1	10/16/2012 9:15:48 PM
Cadmium	ND	0.208		mg/Kg-dry	1	10/16/2012 9:15:48 PM
Chromium	74.4	0.104		mg/Kg-dry	1	10/16/2012 9:15:48 PM
Lead	5.41	0.208		mg/Kg-dry	1	10/16/2012 9:15:48 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 9:33:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-003
Matrix: Soil
Client Sample ID: B21-3-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.521		mg/Kg-dry	1	10/16/2012 9:15:48 PM
Silver	ND	0.104		mg/Kg-dry	1	10/16/2012 9:15:48 PM
Mercury by EPA Method 7471				Batch ID: 3441		Analyst: SG
Mercury	ND	0.327		mg/Kg-dry	1	10/16/2012 7:37:13 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	25.0			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 9:42:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-014
Matrix: Soil
Client Sample ID: B21-4-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	22.4		mg/Kg-dry	1	10/17/2012 6:07:00 AM
Heavy Oil	ND	55.9		mg/Kg-dry	1	10/17/2012 6:07:00 AM
Surr: 2-Fluorobiphenyl	105	50-150		%REC	1	10/17/2012 6:07:00 AM
Surr: o-Terphenyl	106	50-150		%REC	1	10/17/2012 6:07:00 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3447		Analyst: PH
Naphthalene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
2-Methylnaphthalene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
1-Methylnaphthalene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Acenaphthylene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Acenaphthene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Fluorene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Phenanthrene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Anthracene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Fluoranthene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Pyrene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Benz(a)anthracene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Chrysene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Benzo(b)fluoranthene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Benzo(k)fluoranthene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Benzo(a)pyrene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Indeno(1,2,3-cd)pyrene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Dibenz(a,h)anthracene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Benzo(g,h,i)perylene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Surr: 2-Fluorobiphenyl	60.9	50.4-142		%REC	1	10/18/2012 6:31:00 PM
Surr: Terphenyl-d14 (surr)	85.3	48.8-157		%REC	1	10/18/2012 6:31:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.02		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 4:13:00 AM
Surr: Fluorobenzene	100	65-135		%REC	1	10/16/2012 4:13:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 9:42:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-014
Matrix: Soil
Client Sample ID: B21-4-5.0

Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439 Analyst: EM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0602		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Chloromethane	ND	0.0602		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Vinyl chloride	ND	0.00201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Bromomethane	ND	0.0903		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Chloroethane	ND	0.0602		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1-Dichloroethene	ND	0.0502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Methylene chloride	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
trans-1,2-Dichloroethene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1-Dichloroethane	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
2,2-Dichloropropane	ND	0.0502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
cis-1,2-Dichloroethene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Chloroform	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1-Dichloropropene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Carbon tetrachloride	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2-Dichloroethane	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Benzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Trichloroethene (TCE)	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2-Dichloropropane	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Bromodichloromethane	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Dibromomethane	ND	0.0401		mg/Kg-dry	1	10/16/2012 4:13:00 AM
cis-1,3-Dichloropropene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Toluene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
trans-1,3-Dichloropropene	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1,2-Trichloroethane	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,3-Dichloropropane	ND	0.0502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Tetrachloroethene (PCE)	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Dibromochloromethane	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2-Dibromoethane (EDB)	ND	0.00502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Chlorobenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Ethylbenzene	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
m,p-Xylene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 9:42:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-014
Matrix: Soil
Client Sample ID: B21-4-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Styrene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Isopropylbenzene	ND	0.0803		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Bromoform	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
n-Propylbenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Bromobenzene	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,3,5-Trimethylbenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
2-Chlorotoluene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
4-Chlorotoluene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
tert-Butylbenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2,3-Trichloropropane	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2,4-Trichlorobenzene	ND	0.0502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
sec-Butylbenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
4-Isopropyltoluene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,3-Dichlorobenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,4-Dichlorobenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
n-Butylbenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2-Dichlorobenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2,4-Trimethylbenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Hexachlorobutadiene	ND	0.100		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Naphthalene	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2,3-Trichlorobenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Surr: 1-Bromo-4-fluorobenzene	98.1	63.1-141		%REC	1	10/16/2012 4:13:00 AM
Surr: Dibromofluoromethane	98.0	67.6-119		%REC	1	10/16/2012 4:13:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 4:13:00 AM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	7.24	0.0769		mg/Kg-dry	1	10/16/2012 10:29:54 PM
Barium	106	0.385		mg/Kg-dry	1	10/16/2012 10:29:54 PM
Cadmium	ND	0.154		mg/Kg-dry	1	10/16/2012 10:29:54 PM
Chromium	49.8	0.0769		mg/Kg-dry	1	10/16/2012 10:29:54 PM
Lead	3.46	0.154		mg/Kg-dry	1	10/16/2012 10:29:54 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 9:42:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-014
Matrix: Soil
Client Sample ID: B21-4-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.385		mg/Kg-dry	1	10/16/2012 10:29:54 PM
Silver	ND	0.0769		mg/Kg-dry	1	10/16/2012 10:29:54 PM
Mercury by EPA Method 7471				Batch ID: 3441		Analyst: SG
Mercury	ND	0.290		mg/Kg-dry	1	10/16/2012 7:38:49 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	15.6			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 10:25:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-027
Matrix: Soil
Client Sample ID: B21-5-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	23.6		mg/Kg-dry	1	10/17/2012 6:34:00 AM
Heavy Oil	ND	59.0		mg/Kg-dry	1	10/17/2012 6:34:00 AM
Surr: 2-Fluorobiphenyl	106	50-150		%REC	1	10/17/2012 6:34:00 AM
Surr: o-Terphenyl	106	50-150		%REC	1	10/17/2012 6:34:00 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3447		Analyst: PH
Naphthalene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
2-Methylnaphthalene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
1-Methylnaphthalene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Acenaphthylene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Acenaphthene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Fluorene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Phenanthrene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Anthracene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Fluoranthene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Pyrene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Benz(a)anthracene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Chrysene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Benzo(b)fluoranthene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Benzo(k)fluoranthene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Benzo(a)pyrene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Indeno(1,2,3-cd)pyrene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Dibenz(a,h)anthracene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Benzo(g,h,i)perylene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Surr: 2-Fluorobiphenyl	90.0	50.4-142		%REC	1	10/18/2012 7:22:00 PM
Surr: Terphenyl-d14 (surr)	102	48.8-157		%REC	1	10/18/2012 7:22:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.31		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 5:42:00 AM
Surr: Fluorobenzene	98.5	65-135		%REC	1	10/16/2012 5:42:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 10:25:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-027
Matrix: Soil
Client Sample ID: B21-5-7.5

Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439 Analyst: EM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0637		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Chloromethane	ND	0.0637		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Vinyl chloride	ND	0.00212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Bromomethane	ND	0.0956		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Chloroethane	ND	0.0637		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1-Dichloroethene	ND	0.0531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Methylene chloride	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
trans-1,2-Dichloroethene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1-Dichloroethane	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
2,2-Dichloropropane	ND	0.0531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
cis-1,2-Dichloroethene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Chloroform	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1-Dichloropropene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Carbon tetrachloride	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2-Dichloroethane	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Benzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Trichloroethene (TCE)	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2-Dichloropropane	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Bromodichloromethane	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Dibromomethane	ND	0.0425		mg/Kg-dry	1	10/16/2012 5:42:00 AM
cis-1,3-Dichloropropene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Toluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
trans-1,3-Dichloropropene	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1,2-Trichloroethane	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,3-Dichloropropane	ND	0.0531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Tetrachloroethene (PCE)	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Dibromochloromethane	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2-Dibromoethane (EDB)	ND	0.00531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Chlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Ethylbenzene	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
m,p-Xylene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/5/2012 10:25:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-027 **Matrix:** Soil

Client Sample ID: B21-5-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Styrene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Isopropylbenzene	ND	0.0849		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Bromoform	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
n-Propylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Bromobenzene	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,3,5-Trimethylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
2-Chlorotoluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
4-Chlorotoluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
tert-Butylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2,3-Trichloropropane	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2,4-Trichlorobenzene	ND	0.0531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
sec-Butylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
4-Isopropyltoluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,3-Dichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,4-Dichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
n-Butylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2-Dichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2,4-Trimethylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Hexachlorobutadiene	ND	0.106		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Naphthalene	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2,3-Trichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Surr: 1-Bromo-4-fluorobenzene	100	63.1-141		%REC	1	10/16/2012 5:42:00 AM
Surr: Dibromofluoromethane	98.2	67.6-119		%REC	1	10/16/2012 5:42:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 5:42:00 AM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	6.54	0.0966		mg/Kg-dry	1	10/16/2012 10:38:57 PM
Barium	138	0.483		mg/Kg-dry	1	10/16/2012 10:38:57 PM
Cadmium	ND	0.193		mg/Kg-dry	1	10/16/2012 10:38:57 PM
Chromium	50.7	0.0966		mg/Kg-dry	1	10/16/2012 10:38:57 PM
Lead	4.39	0.193		mg/Kg-dry	1	10/16/2012 10:38:57 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 10:25:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-027
Matrix: Soil
Client Sample ID: B21-5-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.483		mg/Kg-dry	1	10/16/2012 10:38:57 PM
Silver	ND	0.0966		mg/Kg-dry	1	10/16/2012 10:38:57 PM
Mercury by EPA Method 7471				Batch ID: 3441		Analyst: SG
Mercury	ND	0.302		mg/Kg-dry	1	10/16/2012 7:40:26 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	20.4			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 11:45:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-039
Matrix: Soil
Client Sample ID: B21-6-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	24.0		mg/Kg-dry	1	10/17/2012 7:01:00 AM
Heavy Oil	ND	60.0		mg/Kg-dry	1	10/17/2012 7:01:00 AM
Surr: 2-Fluorobiphenyl	102	50-150		%REC	1	10/17/2012 7:01:00 AM
Surr: o-Terphenyl	103	50-150		%REC	1	10/17/2012 7:01:00 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3447		Analyst: PH
Naphthalene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
2-Methylnaphthalene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
1-Methylnaphthalene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Acenaphthylene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Acenaphthene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Fluorene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Phenanthrene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Anthracene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Fluoranthene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Pyrene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Benz(a)anthracene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Chrysene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Benzo(b)fluoranthene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Benzo(k)fluoranthene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Benzo(a)pyrene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Indeno(1,2,3-cd)pyrene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Dibenz(a,h)anthracene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Benzo(g,h,i)perylene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Surr: 2-Fluorobiphenyl	64.5	50.4-142		%REC	1	10/18/2012 7:48:00 PM
Surr: Terphenyl-d14 (surr)	74.4	48.8-157		%REC	1	10/18/2012 7:48:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.95		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Surr: 1,2-Dichloroethane-d4	107	65-135		%REC	1	10/16/2012 6:12:00 AM
Surr: Fluorobenzene	100	65-135		%REC	1	10/16/2012 6:12:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 11:45:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-039
Matrix: Soil
Client Sample ID: B21-6-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0714		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Chloromethane	ND	0.0714		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Vinyl chloride	ND	0.00238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Bromomethane	ND	0.107		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Chloroethane	ND	0.0714		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1-Dichloroethene	ND	0.0595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Methylene chloride	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
trans-1,2-Dichloroethene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1-Dichloroethane	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
2,2-Dichloropropane	ND	0.0595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
cis-1,2-Dichloroethene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Chloroform	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1-Dichloropropene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Carbon tetrachloride	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2-Dichloroethane	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Benzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Trichloroethene (TCE)	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2-Dichloropropane	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Bromodichloromethane	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Dibromomethane	ND	0.0476		mg/Kg-dry	1	10/16/2012 6:12:00 AM
cis-1,3-Dichloropropene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Toluene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
trans-1,3-Dichloropropene	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1,2-Trichloroethane	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,3-Dichloropropane	ND	0.0595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Tetrachloroethene (PCE)	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Dibromochloromethane	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2-Dibromoethane (EDB)	ND	0.00595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Chlorobenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Ethylbenzene	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
m,p-Xylene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 11:45:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-039
Matrix: Soil
Client Sample ID: B21-6-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Styrene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Isopropylbenzene	ND	0.0952		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Bromoform	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
n-Propylbenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Bromobenzene	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,3,5-Trimethylbenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
2-Chlorotoluene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
4-Chlorotoluene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
tert-Butylbenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2,3-Trichloropropane	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2,4-Trichlorobenzene	ND	0.0595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
sec-Butylbenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
4-Isopropyltoluene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,3-Dichlorobenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,4-Dichlorobenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
n-Butylbenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2-Dichlorobenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2,4-Trimethylbenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Hexachlorobutadiene	ND	0.119		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Naphthalene	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2,3-Trichlorobenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/16/2012 6:12:00 AM
Surr: Dibromofluoromethane	98.7	67.6-119		%REC	1	10/16/2012 6:12:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 6:12:00 AM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	4.24	0.0945		mg/Kg-dry	1	10/16/2012 10:48:01 PM
Barium	138	0.472		mg/Kg-dry	1	10/16/2012 10:48:01 PM
Cadmium	ND	0.189		mg/Kg-dry	1	10/16/2012 10:48:01 PM
Chromium	66.0	0.0945		mg/Kg-dry	1	10/16/2012 10:48:01 PM
Lead	5.40	0.189		mg/Kg-dry	1	10/16/2012 10:48:01 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 11:45:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-039
Matrix: Soil
Client Sample ID: B21-6-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.472		mg/Kg-dry	1	10/16/2012 10:48:01 PM
Silver	ND	0.0945		mg/Kg-dry	1	10/16/2012 10:48:01 PM
Mercury by EPA Method 7471				Batch ID: 3441		Analyst: SG
Mercury	ND	0.311		mg/Kg-dry	1	10/16/2012 7:42:03 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	22.7			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 11:55:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-041
Matrix: Soil
Client Sample ID: B21-6-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	22.8		mg/Kg-dry	1	10/17/2012 7:27:00 AM
Heavy Oil	ND	57.1		mg/Kg-dry	1	10/17/2012 7:27:00 AM
Surr: 2-Fluorobiphenyl	98.5	50-150		%REC	1	10/17/2012 7:27:00 AM
Surr: o-Terphenyl	98.9	50-150		%REC	1	10/17/2012 7:27:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	4.98		mg/Kg-dry	1	10/16/2012 6:41:00 AM
Surr: 1,2-Dichloroethane-d4	107	65-135		%REC	1	10/16/2012 6:41:00 AM
Surr: Fluorobenzene	100	65-135		%REC	1	10/16/2012 6:41:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Benzene	ND	0.0199		mg/Kg-dry	1	10/16/2012 6:41:00 AM
Toluene	ND	0.0199		mg/Kg-dry	1	10/16/2012 6:41:00 AM
Ethylbenzene	ND	0.0299		mg/Kg-dry	1	10/16/2012 6:41:00 AM
m,p-Xylene	ND	0.0199		mg/Kg-dry	1	10/16/2012 6:41:00 AM
o-Xylene	ND	0.0199		mg/Kg-dry	1	10/16/2012 6:41:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/16/2012 6:41:00 AM
Surr: Dibromofluoromethane	97.7	67.6-119		%REC	1	10/16/2012 6:41:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 6:41:00 AM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	4.23	0.0846		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Barium	117	0.423		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Cadmium	ND	0.169		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Chromium	62.9	0.0846		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Lead	4.30	0.169		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Selenium	ND	0.423		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Silver	ND	0.0846		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Mercury by EPA Method 7471				Batch ID: 3441		Analyst: SG
Mercury	ND	0.278		mg/Kg-dry	1	10/16/2012 7:43:40 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 11:55:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-041
Matrix: Soil
Client Sample ID: B21-6-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	19.6			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 12:20:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-050
Matrix: Soil
Client Sample ID: B21-7-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	25.2		mg/Kg-dry	1	10/17/2012 7:54:00 AM
Heavy Oil	ND	63.1		mg/Kg-dry	1	10/17/2012 7:54:00 AM
Surr: 2-Fluorobiphenyl	97.3	50-150		%REC	1	10/17/2012 7:54:00 AM
Surr: o-Terphenyl	97.7	50-150		%REC	1	10/17/2012 7:54:00 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3447		Analyst: PH
Naphthalene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
2-Methylnaphthalene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
1-Methylnaphthalene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Acenaphthylene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Acenaphthene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Fluorene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Phenanthrene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Anthracene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Fluoranthene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Pyrene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Benz(a)anthracene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Chrysene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Benzo(b)fluoranthene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Benzo(k)fluoranthene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Benzo(a)pyrene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Indeno(1,2,3-cd)pyrene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Dibenz(a,h)anthracene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Benzo(g,h,i)perylene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Surr: 2-Fluorobiphenyl	77.0	50.4-142		%REC	1	10/18/2012 8:13:00 PM
Surr: Terphenyl-d14 (surr)	80.9	48.8-157		%REC	1	10/18/2012 8:13:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.60		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Surr: 1,2-Dichloroethane-d4	107	65-135		%REC	1	10/16/2012 7:11:00 AM
Surr: Fluorobenzene	99.3	65-135		%REC	1	10/16/2012 7:11:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 12:20:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-050
Matrix: Soil
Client Sample ID: B21-7-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0672		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Chloromethane	ND	0.0672		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Vinyl chloride	ND	0.00224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Bromomethane	ND	0.101		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Chloroethane	ND	0.0672		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1-Dichloroethene	ND	0.0560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Methylene chloride	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
trans-1,2-Dichloroethene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1-Dichloroethane	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
2,2-Dichloropropane	ND	0.0560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
cis-1,2-Dichloroethene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Chloroform	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1-Dichloropropene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Carbon tetrachloride	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2-Dichloroethane	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Benzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Trichloroethene (TCE)	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2-Dichloropropane	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Bromodichloromethane	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Dibromomethane	ND	0.0448		mg/Kg-dry	1	10/16/2012 7:11:00 AM
cis-1,3-Dichloropropene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Toluene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
trans-1,3-Dichloropropene	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1,2-Trichloroethane	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,3-Dichloropropane	ND	0.0560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Tetrachloroethene (PCE)	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Dibromochloromethane	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2-Dibromoethane (EDB)	ND	0.00560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Chlorobenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Ethylbenzene	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
m,p-Xylene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 12:20:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-050
Matrix: Soil
Client Sample ID: B21-7-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Styrene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Isopropylbenzene	ND	0.0896		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Bromoform	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
n-Propylbenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Bromobenzene	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,3,5-Trimethylbenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
2-Chlorotoluene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
4-Chlorotoluene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
tert-Butylbenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2,3-Trichloropropane	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2,4-Trichlorobenzene	ND	0.0560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
sec-Butylbenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
4-Isopropyltoluene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,3-Dichlorobenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,4-Dichlorobenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
n-Butylbenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2-Dichlorobenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2,4-Trimethylbenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Hexachlorobutadiene	ND	0.112		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Naphthalene	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2,3-Trichlorobenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.4	63.1-141		%REC	1	10/16/2012 7:11:00 AM
Surr: Dibromofluoromethane	97.2	67.6-119		%REC	1	10/16/2012 7:11:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 7:11:00 AM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	9.65	0.0850		mg/Kg-dry	1	10/16/2012 11:06:06 PM
Barium	145	0.425		mg/Kg-dry	1	10/16/2012 11:06:06 PM
Cadmium	ND	0.170		mg/Kg-dry	1	10/16/2012 11:06:06 PM
Chromium	79.7	0.0850		mg/Kg-dry	1	10/16/2012 11:06:06 PM
Lead	5.84	0.170		mg/Kg-dry	1	10/16/2012 11:06:06 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 12:20:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-050
Matrix: Soil
Client Sample ID: B21-7-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.425		mg/Kg-dry	1	10/16/2012 11:06:06 PM
Silver	ND	0.0850		mg/Kg-dry	1	10/16/2012 11:06:06 PM
Mercury by EPA Method 7471				Batch ID: 3441		Analyst: SG
Mercury	ND	0.287		mg/Kg-dry	1	10/16/2012 7:48:31 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	23.6			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 12:40:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-053
Matrix: Soil
Client Sample ID: B21-7-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	21.9		mg/Kg-dry	1	10/17/2012 8:20:00 AM
Heavy Oil	ND	54.7		mg/Kg-dry	1	10/17/2012 8:20:00 AM
Surr: 2-Fluorobiphenyl	93.2	50-150		%REC	1	10/17/2012 8:20:00 AM
Surr: o-Terphenyl	94.5	50-150		%REC	1	10/17/2012 8:20:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.07		mg/Kg-dry	1	10/16/2012 7:41:00 AM
Surr: 1,2-Dichloroethane-d4	108	65-135		%REC	1	10/16/2012 7:41:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/16/2012 7:41:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Benzene	ND	0.0203		mg/Kg-dry	1	10/16/2012 7:41:00 AM
Toluene	ND	0.0203		mg/Kg-dry	1	10/16/2012 7:41:00 AM
Ethylbenzene	ND	0.0304		mg/Kg-dry	1	10/16/2012 7:41:00 AM
m,p-Xylene	ND	0.0203		mg/Kg-dry	1	10/16/2012 7:41:00 AM
o-Xylene	ND	0.0203		mg/Kg-dry	1	10/16/2012 7:41:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/16/2012 7:41:00 AM
Surr: Dibromofluoromethane	97.3	67.6-119		%REC	1	10/16/2012 7:41:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 7:41:00 AM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	6.87	0.0809		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Barium	122	0.405		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Cadmium	ND	0.162		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Chromium	54.9	0.0809		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Lead	4.35	0.162		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Selenium	ND	0.405		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Silver	ND	0.0809		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Mercury by EPA Method 7471				Batch ID: 3441		Analyst: SG
Mercury	ND	0.282		mg/Kg-dry	1	10/16/2012 7:50:08 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 12:40:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-053
Matrix: Soil
Client Sample ID: B21-7-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	14.8			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 1:24:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-062
Matrix: Soil
Client Sample ID: B21-8-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	24.6		mg/Kg-dry	1	10/17/2012 8:47:00 AM
Heavy Oil	ND	61.6		mg/Kg-dry	1	10/17/2012 8:47:00 AM
Surr: 2-Fluorobiphenyl	102	50-150		%REC	1	10/17/2012 8:47:00 AM
Surr: o-Terphenyl	103	50-150		%REC	1	10/17/2012 8:47:00 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3447		Analyst: PH
Naphthalene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
2-Methylnaphthalene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
1-Methylnaphthalene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Acenaphthylene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Acenaphthene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Fluorene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Phenanthrene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Anthracene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Fluoranthene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Pyrene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Benz(a)anthracene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Chrysene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Benzo(b)fluoranthene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Benzo(k)fluoranthene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Benzo(a)pyrene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Indeno(1,2,3-cd)pyrene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Dibenz(a,h)anthracene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Benzo(g,h,i)perylene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Surr: 2-Fluorobiphenyl	64.3	50.4-142		%REC	1	10/18/2012 8:39:00 PM
Surr: Terphenyl-d14 (surr)	82.6	48.8-157		%REC	1	10/18/2012 8:39:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.94		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 8:11:00 AM
Surr: Fluorobenzene	100	65-135		%REC	1	10/16/2012 8:11:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 1:24:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-062
Matrix: Soil
Client Sample ID: B21-8-5.0

Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439 Analyst: EM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0712		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Chloromethane	ND	0.0712		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Vinyl chloride	ND	0.00237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Bromomethane	ND	0.107		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Chloroethane	ND	0.0712		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1-Dichloroethene	ND	0.0594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Methylene chloride	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
trans-1,2-Dichloroethene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1-Dichloroethane	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
2,2-Dichloropropane	ND	0.0594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
cis-1,2-Dichloroethene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Chloroform	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1-Dichloropropene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Carbon tetrachloride	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2-Dichloroethane	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Benzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Trichloroethene (TCE)	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2-Dichloropropane	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Bromodichloromethane	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Dibromomethane	ND	0.0475		mg/Kg-dry	1	10/16/2012 8:11:00 AM
cis-1,3-Dichloropropene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Toluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
trans-1,3-Dichloropropene	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1,2-Trichloroethane	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,3-Dichloropropane	ND	0.0594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Tetrachloroethene (PCE)	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Dibromochloromethane	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2-Dibromoethane (EDB)	ND	0.00594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Chlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Ethylbenzene	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
m,p-Xylene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 1:24:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-062
Matrix: Soil
Client Sample ID: B21-8-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Styrene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Isopropylbenzene	ND	0.0950		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Bromoform	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
n-Propylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Bromobenzene	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,3,5-Trimethylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
2-Chlorotoluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
4-Chlorotoluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
tert-Butylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2,3-Trichloropropane	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2,4-Trichlorobenzene	ND	0.0594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
sec-Butylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
4-Isopropyltoluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,3-Dichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,4-Dichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
n-Butylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2-Dichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2,4-Trimethylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Hexachlorobutadiene	ND	0.119		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Naphthalene	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2,3-Trichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Surr: 1-Bromo-4-fluorobenzene	103	63.1-141		%REC	1	10/16/2012 8:11:00 AM
Surr: Dibromofluoromethane	98.7	67.6-119		%REC	1	10/16/2012 8:11:00 AM
Surr: Toluene-d8	102	78.5-126		%REC	1	10/16/2012 8:11:00 AM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	5.47	0.0965		mg/Kg-dry	1	10/16/2012 11:24:10 PM
Barium	159	0.483		mg/Kg-dry	1	10/16/2012 11:24:10 PM
Cadmium	ND	0.193		mg/Kg-dry	1	10/16/2012 11:24:10 PM
Chromium	76.5	0.0965		mg/Kg-dry	1	10/16/2012 11:24:10 PM
Lead	5.60	0.193		mg/Kg-dry	1	10/16/2012 11:24:10 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 1:24:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-062
Matrix: Soil
Client Sample ID: B21-8-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.483		mg/Kg-dry	1	10/16/2012 11:24:10 PM
Silver	ND	0.0965		mg/Kg-dry	1	10/16/2012 11:24:10 PM
Mercury by EPA Method 7471				Batch ID: 3441		Analyst: SG
Mercury	ND	0.302		mg/Kg-dry	1	10/16/2012 7:51:44 PM
Sample Moisture (Percent Moisture)				Batch ID: R6244		Analyst: CM
Percent Moisture	23.3			wt%	1	10/22/2012 10:21:44 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/5/2012 2:15:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-073 **Matrix:** Soil

Client Sample ID: B21-9-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	22.1		mg/Kg-dry	1	10/17/2012 5:43:00 PM
Heavy Oil	ND	55.2		mg/Kg-dry	1	10/17/2012 5:43:00 PM
Surr: 2-Fluorobiphenyl	111	50-150		%REC	1	10/17/2012 5:43:00 PM
Surr: o-Terphenyl	107	50-150		%REC	1	10/17/2012 5:43:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3447		Analyst: PH
Naphthalene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
2-Methylnaphthalene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
1-Methylnaphthalene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Acenaphthylene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Acenaphthene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Fluorene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Phenanthrene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Anthracene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Fluoranthene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Pyrene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Benz(a)anthracene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Chrysene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Benzo(b)fluoranthene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Benzo(k)fluoranthene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Benzo(a)pyrene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Indeno(1,2,3-cd)pyrene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Dibenz(a,h)anthracene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Benzo(g,h,i)perylene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Surr: 2-Fluorobiphenyl	66.4	50.4-142		%REC	1	10/18/2012 9:04:00 PM
Surr: Terphenyl-d14 (surr)	80.8	48.8-157		%REC	1	10/18/2012 9:04:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	4.65		mg/Kg-dry	1	10/16/2012 8:40:00 AM
Surr: 1,2-Dichloroethane-d4	105	65-135		%REC	1	10/16/2012 8:40:00 AM
Surr: Fluorobenzene	98.7	65-135		%REC	1	10/16/2012 8:40:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 2:15:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-073
Matrix: Soil
Client Sample ID: B21-9-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	8.14	0.0741		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Barium	122	0.371		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Cadmium	ND	0.148		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Chromium	47.7	0.0741		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Lead	3.71	0.148		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Selenium	ND	0.371		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Silver	1.07	0.0741		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Mercury by EPA Method 7471				Batch ID: 3441		Analyst: SG
Mercury	ND	0.251		mg/Kg-dry	1	10/16/2012 7:53:21 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	15.7			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 2:35:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-076
Matrix: Soil
Client Sample ID: B21-9-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	22.8		mg/Kg-dry	1	10/17/2012 6:10:00 PM
Heavy Oil	ND	56.9		mg/Kg-dry	1	10/17/2012 6:10:00 PM
Surr: 2-Fluorobiphenyl	119	50-150		%REC	1	10/17/2012 6:10:00 PM
Surr: o-Terphenyl	113	50-150		%REC	1	10/17/2012 6:10:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.21		mg/Kg-dry	1	10/16/2012 9:10:00 AM
Surr: 1,2-Dichloroethane-d4	107	65-135		%REC	1	10/16/2012 9:10:00 AM
Surr: Fluorobenzene	98.5	65-135		%REC	1	10/16/2012 9:10:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Benzene	ND	0.0208		mg/Kg-dry	1	10/16/2012 9:10:00 AM
Toluene	ND	0.0208		mg/Kg-dry	1	10/16/2012 9:10:00 AM
Ethylbenzene	ND	0.0313		mg/Kg-dry	1	10/16/2012 9:10:00 AM
m,p-Xylene	ND	0.0208		mg/Kg-dry	1	10/16/2012 9:10:00 AM
o-Xylene	ND	0.0208		mg/Kg-dry	1	10/16/2012 9:10:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/16/2012 9:10:00 AM
Surr: Dibromofluoromethane	99.6	67.6-119		%REC	1	10/16/2012 9:10:00 AM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/16/2012 9:10:00 AM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	3.78	0.0818		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Barium	88.7	0.409		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Cadmium	ND	0.164		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Chromium	44.4	0.0818		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Lead	3.22	0.164		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Selenium	ND	0.409		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Silver	0.105	0.0818		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Mercury by EPA Method 7471				Batch ID: 3441		Analyst: SG
Mercury	ND	0.291		mg/Kg-dry	1	10/16/2012 7:54:57 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/5/2012 2:35:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-076
Matrix: Soil
Client Sample ID: B21-9-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	19.0			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/8/2012 8:55:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-085 **Matrix:** Soil

Client Sample ID: B21-10-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	23.0		mg/Kg-dry	1	10/17/2012 6:37:00 PM
Heavy Oil	ND	57.5		mg/Kg-dry	1	10/17/2012 6:37:00 PM
Surr: 2-Fluorobiphenyl	109	50-150		%REC	1	10/17/2012 6:37:00 PM
Surr: o-Terphenyl	104	50-150		%REC	1	10/17/2012 6:37:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3447		Analyst: PH
Naphthalene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
2-Methylnaphthalene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
1-Methylnaphthalene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Acenaphthylene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Acenaphthene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Fluorene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Phenanthrene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Anthracene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Fluoranthene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Pyrene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Benz(a)anthracene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Chrysene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Benzo(b)fluoranthene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Benzo(k)fluoranthene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Benzo(a)pyrene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Indeno(1,2,3-cd)pyrene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Dibenz(a,h)anthracene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Benzo(g,h,i)perylene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Surr: 2-Fluorobiphenyl	60.9	50.4-142		%REC	1	10/18/2012 9:29:00 PM
Surr: Terphenyl-d14 (surr)	72.2	48.8-157		%REC	1	10/18/2012 9:29:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.25		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 9:56:00 AM
Surr: Fluorobenzene	99.6	65-135		%REC	1	10/16/2012 9:56:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 8:55:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-085
Matrix: Soil
Client Sample ID: B21-10-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0630		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Chloromethane	ND	0.0630		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Vinyl chloride	ND	0.00210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Bromomethane	ND	0.0945		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Chloroethane	ND	0.0630		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1-Dichloroethene	ND	0.0525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Methylene chloride	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
trans-1,2-Dichloroethene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1-Dichloroethane	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
2,2-Dichloropropane	ND	0.0525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
cis-1,2-Dichloroethene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Chloroform	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1-Dichloropropene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Carbon tetrachloride	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2-Dichloroethane	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Benzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Trichloroethene (TCE)	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2-Dichloropropane	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Bromodichloromethane	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Dibromomethane	ND	0.0420		mg/Kg-dry	1	10/16/2012 9:56:00 AM
cis-1,3-Dichloropropene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Toluene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
trans-1,3-Dichloropropene	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1,2-Trichloroethane	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,3-Dichloropropane	ND	0.0525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Tetrachloroethene (PCE)	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Dibromochloromethane	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2-Dibromoethane (EDB)	ND	0.00525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Chlorobenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Ethylbenzene	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
m,p-Xylene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 8:55:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-085
Matrix: Soil
Client Sample ID: B21-10-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Styrene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Isopropylbenzene	ND	0.0840		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Bromoform	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
n-Propylbenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Bromobenzene	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,3,5-Trimethylbenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
2-Chlorotoluene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
4-Chlorotoluene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
tert-Butylbenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2,3-Trichloropropane	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2,4-Trichlorobenzene	ND	0.0525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
sec-Butylbenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
4-Isopropyltoluene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,3-Dichlorobenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,4-Dichlorobenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
n-Butylbenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2-Dichlorobenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2,4-Trimethylbenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Hexachlorobutadiene	ND	0.105		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Naphthalene	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2,3-Trichlorobenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Surr: 1-Bromo-4-fluorobenzene	104	63.1-141		%REC	1	10/16/2012 9:56:00 AM
Surr: Dibromofluoromethane	97.3	67.6-119		%REC	1	10/16/2012 9:56:00 AM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/16/2012 9:56:00 AM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	4.54	0.0785		mg/Kg-dry	1	10/16/2012 11:51:17 PM
Barium	130	0.392		mg/Kg-dry	1	10/16/2012 11:51:17 PM
Cadmium	ND	0.157		mg/Kg-dry	1	10/16/2012 11:51:17 PM
Chromium	57.9	0.0785		mg/Kg-dry	1	10/16/2012 11:51:17 PM
Lead	16.6	0.157		mg/Kg-dry	1	10/16/2012 11:51:17 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 8:55:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-085
Matrix: Soil
Client Sample ID: B21-10-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.392		mg/Kg-dry	1	10/16/2012 11:51:17 PM
Silver	0.109	0.0785		mg/Kg-dry	1	10/16/2012 11:51:17 PM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.250		mg/Kg-dry	1	10/18/2012 11:51:31 AM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	16.7			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/8/2012 9:20:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-091 **Matrix:** Soil

Client Sample ID: B21-10-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	18.6		mg/Kg-dry	1	10/17/2012 7:31:00 PM
Heavy Oil	ND	46.5		mg/Kg-dry	1	10/17/2012 7:31:00 PM
Surr: 2-Fluorobiphenyl	106	50-150		%REC	1	10/17/2012 7:31:00 PM
Surr: o-Terphenyl	100	50-150		%REC	1	10/17/2012 7:31:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	7.30		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 10:26:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/16/2012 10:26:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0876		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Chloromethane	ND	0.0876		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Vinyl chloride	ND	0.00292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Bromomethane	ND	0.131		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Chloroethane	ND	0.0876		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1-Dichloroethene	ND	0.0730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Methylene chloride	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
trans-1,2-Dichloroethene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1-Dichloroethane	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
2,2-Dichloropropane	ND	0.0730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
cis-1,2-Dichloroethene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Chloroform	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1-Dichloropropene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Carbon tetrachloride	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2-Dichloroethane (EDC)	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Benzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Trichloroethene (TCE)	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2-Dichloropropane	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Bromodichloromethane	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM

Qualifiers:

- B Analyte detected in the associated Method Blank
- D Dilution was required
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not detected at the Reporting Limit
- RL Reporting Limit
- S Spike recovery outside accepted recovery limits

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 9:20:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-091
Matrix: Soil
Client Sample ID: B21-10-17.5

Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439 Analyst: EM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dibromomethane	ND	0.0584		mg/Kg-dry	1	10/16/2012 10:26:00 AM
cis-1,3-Dichloropropene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Toluene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
trans-1,3-Dichloropropylene	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1,2-Trichloroethane	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,3-Dichloropropane	ND	0.0730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Tetrachloroethene (PCE)	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Dibromochloromethane	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2-Dibromoethane (EDB)	ND	0.00730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Chlorobenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Ethylbenzene	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
m,p-Xylene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
o-Xylene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Styrene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Isopropylbenzene	ND	0.117		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Bromoform	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
n-Propylbenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Bromobenzene	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,3,5-Trimethylbenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
2-Chlorotoluene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
4-Chlorotoluene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
tert-Butylbenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2,3-Trichloropropane	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2,4-Trichlorobenzene	ND	0.0730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
sec-Butylbenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
4-Isopropyltoluene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,3-Dichlorobenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,4-Dichlorobenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
n-Butylbenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2-Dichlorobenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2,4-Trimethylbenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Hexachlorobutadiene	ND	0.146		mg/Kg-dry	1	10/16/2012 10:26:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 9:20:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-091
Matrix: Soil
Client Sample ID: B21-10-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Naphthalene	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2,3-Trichlorobenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Surr: 1-Bromo-4-fluorobenzene	103	63.1-141		%REC	1	10/16/2012 10:26:00 AM
Surr: Dibromofluoromethane	98.5	67.6-119		%REC	1	10/16/2012 10:26:00 AM
Surr: Toluene-d8	98.9	78.5-126		%REC	1	10/16/2012 10:26:00 AM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	3.46	0.0669	B	mg/Kg-dry	1	10/17/2012 12:19:21 AM
Barium	21.0	0.335		mg/Kg-dry	1	10/17/2012 12:19:21 AM
Cadmium	ND	0.134		mg/Kg-dry	1	10/17/2012 12:19:21 AM
Chromium	17.2	0.0669		mg/Kg-dry	1	10/17/2012 12:19:21 AM
Lead	1.25	0.134		mg/Kg-dry	1	10/17/2012 12:19:21 AM
Selenium	ND	0.335		mg/Kg-dry	1	10/17/2012 12:19:21 AM
Silver	ND	0.0669		mg/Kg-dry	1	10/17/2012 12:19:21 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.240		mg/Kg-dry	1	10/18/2012 11:53:07 AM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	1.73			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 9:50:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-097
Matrix: Soil
Client Sample ID: B21-11-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	21.9		mg/Kg-dry	1	10/17/2012 7:58:00 PM
Heavy Oil	ND	54.8		mg/Kg-dry	1	10/17/2012 7:58:00 PM
Surr: 2-Fluorobiphenyl	97.3	50-150		%REC	1	10/17/2012 7:58:00 PM
Surr: o-Terphenyl	90.9	50-150		%REC	1	10/17/2012 7:58:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3447		Analyst: PH
Naphthalene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
2-Methylnaphthalene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
1-Methylnaphthalene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Acenaphthylene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Acenaphthene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Fluorene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Phenanthrene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Anthracene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Fluoranthene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Pyrene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Benz(a)anthracene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Chrysene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Benzo(b)fluoranthene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Benzo(k)fluoranthene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Benzo(a)pyrene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Indeno(1,2,3-cd)pyrene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Dibenz(a,h)anthracene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Benzo(g,h,i)perylene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Surr: 2-Fluorobiphenyl	72.4	50.4-142		%REC	1	10/18/2012 9:55:00 PM
Surr: Terphenyl-d14 (surr)	85.0	48.8-157		%REC	1	10/18/2012 9:55:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	4.82		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Surr: 1,2-Dichloroethane-d4	109	65-135		%REC	1	10/16/2012 10:56:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/16/2012 10:56:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 9:50:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-097
Matrix: Soil
Client Sample ID: B21-11-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0578		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Chloromethane	ND	0.0578		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Vinyl chloride	ND	0.00193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Bromomethane	ND	0.0867		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Chloroethane	ND	0.0578		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1-Dichloroethene	ND	0.0482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Methylene chloride	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
trans-1,2-Dichloroethene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1-Dichloroethane	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
2,2-Dichloropropane	ND	0.0482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
cis-1,2-Dichloroethene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Chloroform	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1-Dichloropropene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Carbon tetrachloride	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2-Dichloroethane	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Benzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Trichloroethene (TCE)	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2-Dichloropropane	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Bromodichloromethane	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Dibromomethane	ND	0.0385		mg/Kg-dry	1	10/16/2012 10:56:00 AM
cis-1,3-Dichloropropene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Toluene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
trans-1,3-Dichloropropene	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1,2-Trichloroethane	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,3-Dichloropropane	ND	0.0482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Tetrachloroethene (PCE)	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Dibromochloromethane	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2-Dibromoethane (EDB)	ND	0.00482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Chlorobenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Ethylbenzene	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
m,p-Xylene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 9:50:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-097
Matrix: Soil
Client Sample ID: B21-11-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Styrene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Isopropylbenzene	ND	0.0771		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Bromoform	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
n-Propylbenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Bromobenzene	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,3,5-Trimethylbenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
2-Chlorotoluene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
4-Chlorotoluene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
tert-Butylbenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2,3-Trichloropropane	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2,4-Trichlorobenzene	ND	0.0482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
sec-Butylbenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
4-Isopropyltoluene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,3-Dichlorobenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,4-Dichlorobenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
n-Butylbenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2-Dichlorobenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2,4-Trimethylbenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Hexachlorobutadiene	ND	0.0963		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Naphthalene	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2,3-Trichlorobenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Surr: 1-Bromo-4-fluorobenzene	103	63.1-141		%REC	1	10/16/2012 10:56:00 AM
Surr: Dibromofluoromethane	98.4	67.6-119		%REC	1	10/16/2012 10:56:00 AM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/16/2012 10:56:00 AM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	4.82	0.0775		mg/Kg-dry	1	10/17/2012 12:28:23 AM
Barium	118	0.387		mg/Kg-dry	1	10/17/2012 12:28:23 AM
Cadmium	ND	0.155		mg/Kg-dry	1	10/17/2012 12:28:23 AM
Chromium	52.7	0.0775		mg/Kg-dry	1	10/17/2012 12:28:23 AM
Lead	16.2	0.155		mg/Kg-dry	1	10/17/2012 12:28:23 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 9:50:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-097
Matrix: Soil
Client Sample ID: B21-11-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.387		mg/Kg-dry	1	10/17/2012 12:28:23 AM
Silver	ND	0.0775		mg/Kg-dry	1	10/17/2012 12:28:23 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.271		mg/Kg-dry	1	10/18/2012 11:57:57 AM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	16.2			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/8/2012 10:00:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-100 **Matrix:** Soil

Client Sample ID: B21-11-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	27.8		mg/Kg-dry	1	10/17/2012 8:25:00 PM
Heavy Oil	ND	69.4		mg/Kg-dry	1	10/17/2012 8:25:00 PM
Surr: 2-Fluorobiphenyl	98.2	50-150		%REC	1	10/17/2012 8:25:00 PM
Surr: o-Terphenyl	92.4	50-150		%REC	1	10/17/2012 8:25:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3447		Analyst: PH
Naphthalene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
2-Methylnaphthalene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
1-Methylnaphthalene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Acenaphthylene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Acenaphthene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Fluorene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Phenanthrene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Anthracene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Fluoranthene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Pyrene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Benz(a)anthracene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Chrysene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Benzo(b)fluoranthene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Benzo(k)fluoranthene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Benzo(a)pyrene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Indeno(1,2,3-cd)pyrene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Dibenz(a,h)anthracene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Benzo(g,h,i)perylene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Surr: 2-Fluorobiphenyl	75.0	50.4-142		%REC	1	10/18/2012 10:20:00 PM
Surr: Terphenyl-d14 (surr)	82.6	48.8-157		%REC	1	10/18/2012 10:20:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	6.21		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 12:26:00 PM
Surr: Fluorobenzene	99.9	65-135		%REC	1	10/16/2012 12:26:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 10:00:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-100
Matrix: Soil
Client Sample ID: B21-11-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0745		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Chloromethane	ND	0.0745		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Vinyl chloride	ND	0.00248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Bromomethane	ND	0.112		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Chloroethane	ND	0.0745		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1-Dichloroethene	ND	0.0621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Methylene chloride	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
trans-1,2-Dichloroethene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1-Dichloroethane	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
2,2-Dichloropropane	ND	0.0621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
cis-1,2-Dichloroethene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Chloroform	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1-Dichloropropene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Carbon tetrachloride	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2-Dichloroethane	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Benzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Trichloroethene (TCE)	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2-Dichloropropane	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Bromodichloromethane	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Dibromomethane	ND	0.0497		mg/Kg-dry	1	10/16/2012 12:26:00 PM
cis-1,3-Dichloropropene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Toluene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
trans-1,3-Dichloropropene	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1,2-Trichloroethane	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,3-Dichloropropane	ND	0.0621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Tetrachloroethene (PCE)	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Dibromochloromethane	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2-Dibromoethane (EDB)	ND	0.00621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Chlorobenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Ethylbenzene	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
m,p-Xylene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 10:00:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-100
Matrix: Soil
Client Sample ID: B21-11-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Styrene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Isopropylbenzene	ND	0.0994		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Bromoform	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
n-Propylbenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Bromobenzene	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,3,5-Trimethylbenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
2-Chlorotoluene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
4-Chlorotoluene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
tert-Butylbenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2,3-Trichloropropane	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2,4-Trichlorobenzene	ND	0.0621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
sec-Butylbenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
4-Isopropyltoluene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,3-Dichlorobenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,4-Dichlorobenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
n-Butylbenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2-Dichlorobenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2,4-Trimethylbenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Hexachlorobutadiene	ND	0.124		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Naphthalene	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2,3-Trichlorobenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Surr: 1-Bromo-4-fluorobenzene	98.2	63.1-141		%REC	1	10/16/2012 12:26:00 PM
Surr: Dibromofluoromethane	98.2	67.6-119		%REC	1	10/16/2012 12:26:00 PM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 12:26:00 PM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	4.39	0.0965		mg/Kg-dry	1	10/17/2012 12:37:25 AM
Barium	180	0.482		mg/Kg-dry	1	10/17/2012 12:37:25 AM
Cadmium	ND	0.193		mg/Kg-dry	1	10/17/2012 12:37:25 AM
Chromium	92.7	0.0965		mg/Kg-dry	1	10/17/2012 12:37:25 AM
Lead	5.77	0.193		mg/Kg-dry	1	10/17/2012 12:37:25 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 10:00:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-100
Matrix: Soil
Client Sample ID: B21-11-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.482		mg/Kg-dry	1	10/17/2012 12:37:25 AM
Silver	ND	0.0965		mg/Kg-dry	1	10/17/2012 12:37:25 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.341		mg/Kg-dry	1	10/18/2012 11:59:34 AM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	28.0			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 10:40:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-110
Matrix: Soil
Client Sample ID: B21-12-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	23.4		mg/Kg-dry	1	10/17/2012 8:52:00 PM
Heavy Oil	ND	58.4		mg/Kg-dry	1	10/17/2012 8:52:00 PM
Surr: 2-Fluorobiphenyl	106	50-150		%REC	1	10/17/2012 8:52:00 PM
Surr: o-Terphenyl	100	50-150		%REC	1	10/17/2012 8:52:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3447		Analyst: PH
Naphthalene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
2-Methylnaphthalene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
1-Methylnaphthalene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Acenaphthylene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Acenaphthene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Fluorene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Phenanthrene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Anthracene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Fluoranthene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Pyrene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Benz(a)anthracene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Chrysene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Benzo(b)fluoranthene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Benzo(k)fluoranthene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Benzo(a)pyrene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Indeno(1,2,3-cd)pyrene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Dibenz(a,h)anthracene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Benzo(g,h,i)perylene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Surr: 2-Fluorobiphenyl	112	50.4-142		%REC	1	10/19/2012 2:53:00 PM
Surr: Terphenyl-d14 (surr)	112	48.8-157		%REC	1	10/19/2012 2:53:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.65		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Surr: 1,2-Dichloroethane-d4	108	65-135		%REC	1	10/16/2012 12:56:00 PM
Surr: Fluorobenzene	101	65-135		%REC	1	10/16/2012 12:56:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 10:40:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-110
Matrix: Soil
Client Sample ID: B21-12-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0678		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Chloromethane	ND	0.0678		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Vinyl chloride	ND	0.00226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Bromomethane	ND	0.102		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Chloroethane	ND	0.0678		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1-Dichloroethene	ND	0.0565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Methylene chloride	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
trans-1,2-Dichloroethene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1-Dichloroethane	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
2,2-Dichloropropane	ND	0.0565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
cis-1,2-Dichloroethene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Chloroform	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1-Dichloropropene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Carbon tetrachloride	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2-Dichloroethane	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Benzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Trichloroethene (TCE)	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2-Dichloropropane	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Bromodichloromethane	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Dibromomethane	ND	0.0452		mg/Kg-dry	1	10/16/2012 12:56:00 PM
cis-1,3-Dichloropropene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Toluene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
trans-1,3-Dichloropropene	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1,2-Trichloroethane	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,3-Dichloropropane	ND	0.0565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Tetrachloroethene (PCE)	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Dibromochloromethane	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2-Dibromoethane (EDB)	ND	0.00565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Chlorobenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Ethylbenzene	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
m,p-Xylene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 10:40:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-110
Matrix: Soil
Client Sample ID: B21-12-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Styrene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Isopropylbenzene	ND	0.0904		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Bromoform	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
n-Propylbenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Bromobenzene	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,3,5-Trimethylbenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
2-Chlorotoluene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
4-Chlorotoluene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
tert-Butylbenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2,3-Trichloropropane	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2,4-Trichlorobenzene	ND	0.0565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
sec-Butylbenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
4-Isopropyltoluene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,3-Dichlorobenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,4-Dichlorobenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
n-Butylbenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2-Dichlorobenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2,4-Trimethylbenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Hexachlorobutadiene	ND	0.113		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Naphthalene	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2,3-Trichlorobenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Surr: 1-Bromo-4-fluorobenzene	102	63.1-141		%REC	1	10/16/2012 12:56:00 PM
Surr: Dibromofluoromethane	97.6	67.6-119		%REC	1	10/16/2012 12:56:00 PM
Surr: Toluene-d8	99.3	78.5-126		%REC	1	10/16/2012 12:56:00 PM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	5.48	0.0851		mg/Kg-dry	1	10/17/2012 12:46:29 AM
Barium	119	0.426		mg/Kg-dry	1	10/17/2012 12:46:29 AM
Cadmium	ND	0.170		mg/Kg-dry	1	10/17/2012 12:46:29 AM
Chromium	49.6	0.0851		mg/Kg-dry	1	10/17/2012 12:46:29 AM
Lead	4.42	0.170		mg/Kg-dry	1	10/17/2012 12:46:29 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 10:40:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-110
Matrix: Soil
Client Sample ID: B21-12-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.426		mg/Kg-dry	1	10/17/2012 12:46:29 AM
Silver	ND	0.0851		mg/Kg-dry	1	10/17/2012 12:46:29 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.315		mg/Kg-dry	1	10/18/2012 12:01:12 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	20.6			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 11:10:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-115
Matrix: Soil
Client Sample ID: B21-12-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	20.2		mg/Kg-dry	1	10/17/2012 9:19:00 PM
Heavy Oil	ND	50.4		mg/Kg-dry	1	10/17/2012 9:19:00 PM
Surr: 2-Fluorobiphenyl	105	50-150		%REC	1	10/17/2012 9:19:00 PM
Surr: o-Terphenyl	99.5	50-150		%REC	1	10/17/2012 9:19:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3448		Analyst: PH
Naphthalene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
2-Methylnaphthalene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
1-Methylnaphthalene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Acenaphthylene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Acenaphthene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Fluorene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Phenanthrene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Anthracene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Fluoranthene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Pyrene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Benz(a)anthracene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Chrysene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Benzo(b)fluoranthene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Benzo(k)fluoranthene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Benzo(a)pyrene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Indeno(1,2,3-cd)pyrene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Dibenz(a,h)anthracene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Benzo(g,h,i)perylene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Surr: 2-Fluorobiphenyl	127	50.4-142		%REC	1	10/18/2012 1:10:00 AM
Surr: Terphenyl-d14 (surr)	109	48.8-157		%REC	1	10/18/2012 1:10:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	4.80		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Surr: 1,2-Dichloroethane-d4	107	65-135		%REC	1	10/16/2012 1:26:00 PM
Surr: Fluorobenzene	101	65-135		%REC	1	10/16/2012 1:26:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 11:10:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-115
Matrix: Soil
Client Sample ID: B21-12-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0577		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Chloromethane	ND	0.0577		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Vinyl chloride	ND	0.00192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Bromomethane	ND	0.0865		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Chloroethane	ND	0.0577		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1-Dichloroethene	ND	0.0480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Methylene chloride	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
trans-1,2-Dichloroethene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1-Dichloroethane	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
2,2-Dichloropropane	ND	0.0480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
cis-1,2-Dichloroethene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Chloroform	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1-Dichloropropene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Carbon tetrachloride	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2-Dichloroethane	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Benzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Trichloroethene (TCE)	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2-Dichloropropane	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Bromodichloromethane	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Dibromomethane	ND	0.0384		mg/Kg-dry	1	10/16/2012 1:26:00 PM
cis-1,3-Dichloropropene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Toluene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
trans-1,3-Dichloropropene	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1,2-Trichloroethane	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,3-Dichloropropane	ND	0.0480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Tetrachloroethene (PCE)	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Dibromochloromethane	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2-Dibromoethane (EDB)	ND	0.00480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Chlorobenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Ethylbenzene	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
m,p-Xylene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 11:10:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-115
Matrix: Soil
Client Sample ID: B21-12-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Styrene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Isopropylbenzene	ND	0.0769		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Bromoform	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
n-Propylbenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Bromobenzene	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,3,5-Trimethylbenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
2-Chlorotoluene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
4-Chlorotoluene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
tert-Butylbenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2,3-Trichloropropane	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2,4-Trichlorobenzene	ND	0.0480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
sec-Butylbenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
4-Isopropyltoluene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,3-Dichlorobenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,4-Dichlorobenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
n-Butylbenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2-Dichlorobenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2,4-Trimethylbenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Hexachlorobutadiene	ND	0.0961		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Naphthalene	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2,3-Trichlorobenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Surr: 1-Bromo-4-fluorobenzene	102	63.1-141		%REC	1	10/16/2012 1:26:00 PM
Surr: Dibromofluoromethane	98.0	67.6-119		%REC	1	10/16/2012 1:26:00 PM
Surr: Toluene-d8	99.3	78.5-126		%REC	1	10/16/2012 1:26:00 PM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	1.45	0.0774		mg/Kg-dry	1	10/17/2012 12:55:32 AM
Barium	39.0	0.387		mg/Kg-dry	1	10/17/2012 12:55:32 AM
Cadmium	ND	0.155		mg/Kg-dry	1	10/17/2012 12:55:32 AM
Chromium	26.6	0.0774		mg/Kg-dry	1	10/17/2012 12:55:32 AM
Lead	1.63	0.155		mg/Kg-dry	1	10/17/2012 12:55:32 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 11:10:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-115
Matrix: Soil
Client Sample ID: B21-12-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.387		mg/Kg-dry	1	10/17/2012 12:55:32 AM
Silver	ND	0.0774		mg/Kg-dry	1	10/17/2012 12:55:32 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.229		mg/Kg-dry	1	10/18/2012 12:02:50 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	8.98			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 12:05:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-121
Matrix: Soil
Client Sample ID: B21-13-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	24.6		mg/Kg-dry	1	10/17/2012 9:45:00 PM
Heavy Oil	ND	61.5		mg/Kg-dry	1	10/17/2012 9:45:00 PM
Surr: 2-Fluorobiphenyl	107	50-150		%REC	1	10/17/2012 9:45:00 PM
Surr: o-Terphenyl	99.4	50-150		%REC	1	10/17/2012 9:45:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3448		Analyst: PH
Naphthalene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
2-Methylnaphthalene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
1-Methylnaphthalene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Acenaphthylene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Acenaphthene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Fluorene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Phenanthrene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Anthracene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Fluoranthene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Pyrene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Benz(a)anthracene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Chrysene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Benzo(b)fluoranthene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Benzo(k)fluoranthene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Benzo(a)pyrene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Indeno(1,2,3-cd)pyrene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Dibenz(a,h)anthracene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Benzo(g,h,i)perylene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Surr: 2-Fluorobiphenyl	136	50.4-142		%REC	1	10/18/2012 6:35:00 AM
Surr: Terphenyl-d14 (surr)	126	48.8-157		%REC	1	10/18/2012 6:35:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.29		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Surr: 1,2-Dichloroethane-d4	105	65-135		%REC	1	10/16/2012 1:56:00 PM
Surr: Fluorobenzene	100	65-135		%REC	1	10/16/2012 1:56:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 12:05:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-121
Matrix: Soil
Client Sample ID: B21-13-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0635		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Chloromethane	ND	0.0635		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Vinyl chloride	ND	0.00212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Bromomethane	ND	0.0953		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Chloroethane	ND	0.0635		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1-Dichloroethene	ND	0.0529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Methylene chloride	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
trans-1,2-Dichloroethene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1-Dichloroethane	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
2,2-Dichloropropane	ND	0.0529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
cis-1,2-Dichloroethene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Chloroform	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1-Dichloropropene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Carbon tetrachloride	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2-Dichloroethane	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Benzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Trichloroethene (TCE)	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2-Dichloropropane	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Bromodichloromethane	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Dibromomethane	ND	0.0424		mg/Kg-dry	1	10/16/2012 1:56:00 PM
cis-1,3-Dichloropropene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Toluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
trans-1,3-Dichloropropene	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1,2-Trichloroethane	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,3-Dichloropropane	ND	0.0529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Tetrachloroethene (PCE)	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Dibromochloromethane	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2-Dibromoethane (EDB)	ND	0.00529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Chlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Ethylbenzene	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
m,p-Xylene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 12:05:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-121
Matrix: Soil
Client Sample ID: B21-13-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Styrene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Isopropylbenzene	ND	0.0847		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Bromoform	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
n-Propylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Bromobenzene	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,3,5-Trimethylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
2-Chlorotoluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
4-Chlorotoluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
tert-Butylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2,3-Trichloropropane	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2,4-Trichlorobenzene	ND	0.0529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
sec-Butylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
4-Isopropyltoluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,3-Dichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,4-Dichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
n-Butylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2-Dichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2,4-Trimethylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Hexachlorobutadiene	ND	0.106		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Naphthalene	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2,3-Trichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Surr: 1-Bromo-4-fluorobenzene	99.9	63.1-141		%REC	1	10/16/2012 1:56:00 PM
Surr: Dibromofluoromethane	97.0	67.6-119		%REC	1	10/16/2012 1:56:00 PM
Surr: Toluene-d8	99.5	78.5-126		%REC	1	10/16/2012 1:56:00 PM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	10.1	0.0938		mg/Kg-dry	1	10/17/2012 1:04:35 AM
Barium	113	0.469		mg/Kg-dry	1	10/17/2012 1:04:35 AM
Cadmium	0.205	0.188		mg/Kg-dry	1	10/17/2012 1:04:35 AM
Chromium	60.8	0.0938		mg/Kg-dry	1	10/17/2012 1:04:35 AM
Lead	10.7	0.188		mg/Kg-dry	1	10/17/2012 1:04:35 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 12:05:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-121
Matrix: Soil
Client Sample ID: B21-13-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.469		mg/Kg-dry	1	10/17/2012 1:04:35 AM
Silver	ND	0.0938		mg/Kg-dry	1	10/17/2012 1:04:35 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.276		mg/Kg-dry	1	10/18/2012 12:04:25 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	19.2			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 12:18:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-126
Matrix: Soil
Client Sample ID: B21-13-15.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	19.1		mg/Kg-dry	1	10/17/2012 10:12:00 PM
Heavy Oil	ND	47.7		mg/Kg-dry	1	10/17/2012 10:12:00 PM
Surr: 2-Fluorobiphenyl	95.9	50-150		%REC	1	10/17/2012 10:12:00 PM
Surr: o-Terphenyl	89.0	50-150		%REC	1	10/17/2012 10:12:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	6.10		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 2:26:00 PM
Surr: Fluorobenzene	99.5	65-135		%REC	1	10/16/2012 2:26:00 PM
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0732		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Chloromethane	ND	0.0732		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Vinyl chloride	ND	0.00244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Bromomethane	ND	0.110		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Chloroethane	ND	0.0732		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1-Dichloroethene	ND	0.0610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Methylene chloride	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
trans-1,2-Dichloroethene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1-Dichloroethane	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
2,2-Dichloropropane	ND	0.0610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
cis-1,2-Dichloroethene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Chloroform	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1-Dichloropropene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Carbon tetrachloride	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2-Dichloroethane (EDC)	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Benzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Trichloroethene (TCE)	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2-Dichloropropane	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Bromodichloromethane	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 12:18:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-126
Matrix: Soil
Client Sample ID: B21-13-15.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dibromomethane	ND	0.0488		mg/Kg-dry	1	10/16/2012 2:26:00 PM
cis-1,3-Dichloropropene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Toluene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
trans-1,3-Dichloropropylene	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1,2-Trichloroethane	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,3-Dichloropropane	ND	0.0610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Tetrachloroethene (PCE)	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Dibromochloromethane	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2-Dibromoethane (EDB)	ND	0.00610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Chlorobenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Ethylbenzene	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
m,p-Xylene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
o-Xylene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Styrene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Isopropylbenzene	ND	0.0976		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Bromoform	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
n-Propylbenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Bromobenzene	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,3,5-Trimethylbenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
2-Chlorotoluene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
4-Chlorotoluene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
tert-Butylbenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2,3-Trichloropropane	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2,4-Trichlorobenzene	ND	0.0610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
sec-Butylbenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
4-Isopropyltoluene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,3-Dichlorobenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,4-Dichlorobenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
n-Butylbenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2-Dichlorobenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2,4-Trimethylbenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Hexachlorobutadiene	ND	0.122		mg/Kg-dry	1	10/16/2012 2:26:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 12:18:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-126
Matrix: Soil
Client Sample ID: B21-13-15.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Naphthalene	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2,3-Trichlorobenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/16/2012 2:26:00 PM
Surr: Dibromofluoromethane	98.3	67.6-119		%REC	1	10/16/2012 2:26:00 PM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/16/2012 2:26:00 PM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	2.14	0.0683		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Barium	21.5	0.342		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Cadmium	ND	0.137		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Chromium	20.7	0.0683		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Lead	1.05	0.137		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Selenium	ND	0.342		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Silver	ND	0.0683		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.225		mg/Kg-dry	1	10/18/2012 12:06:01 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	4.31			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 1:25:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-133
Matrix: Soil
Client Sample ID: B21-14-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	22.3		mg/Kg-dry	1	10/17/2012 10:39:00 PM
Heavy Oil	ND	55.8		mg/Kg-dry	1	10/17/2012 10:39:00 PM
Surr: 2-Fluorobiphenyl	99.2	50-150		%REC	1	10/17/2012 10:39:00 PM
Surr: o-Terphenyl	90.8	50-150		%REC	1	10/17/2012 10:39:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3448		Analyst: PH
Naphthalene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
2-Methylnaphthalene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
1-Methylnaphthalene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Acenaphthylene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Acenaphthene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Fluorene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Phenanthrene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Anthracene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Fluoranthene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Pyrene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Benz(a)anthracene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Chrysene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Benzo(b)fluoranthene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Benzo(k)fluoranthene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Benzo(a)pyrene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Indeno(1,2,3-cd)pyrene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Dibenz(a,h)anthracene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Benzo(g,h,i)perylene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Surr: 2-Fluorobiphenyl	114	50.4-142		%REC	1	10/18/2012 6:10:00 AM
Surr: Terphenyl-d14 (surr)	122	48.8-157		%REC	1	10/18/2012 6:10:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6222		Analyst: EM
Gasoline	ND	4.90		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Surr: 1,2-Dichloroethane-d4	108	65-135		%REC	1	10/16/2012 3:27:00 PM
Surr: Fluorobenzene	99.2	65-135		%REC	1	10/16/2012 3:27:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 1:25:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-133
Matrix: Soil
Client Sample ID: B21-14-2.5

Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439 Analyst: EM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0588		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Chloromethane	ND	0.0588		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Vinyl chloride	ND	0.00196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Bromomethane	ND	0.0882		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Chloroethane	ND	0.0588		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1-Dichloroethene	ND	0.0490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Methylene chloride	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
trans-1,2-Dichloroethene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1-Dichloroethane	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
2,2-Dichloropropane	ND	0.0490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
cis-1,2-Dichloroethene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Chloroform	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1-Dichloropropene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Carbon tetrachloride	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2-Dichloroethane	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Benzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Trichloroethene (TCE)	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2-Dichloropropane	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Bromodichloromethane	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Dibromomethane	ND	0.0392		mg/Kg-dry	1	10/16/2012 3:27:00 PM
cis-1,3-Dichloropropene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Toluene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
trans-1,3-Dichloropropene	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1,2-Trichloroethane	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,3-Dichloropropane	ND	0.0490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Tetrachloroethene (PCE)	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Dibromochloromethane	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2-Dibromoethane (EDB)	ND	0.00490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Chlorobenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Ethylbenzene	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
m,p-Xylene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/8/2012 1:25:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-133 **Matrix:** Soil

Client Sample ID: B21-14-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Styrene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Isopropylbenzene	ND	0.0784		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Bromoform	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
n-Propylbenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Bromobenzene	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,3,5-Trimethylbenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
2-Chlorotoluene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
4-Chlorotoluene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
tert-Butylbenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2,3-Trichloropropane	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2,4-Trichlorobenzene	ND	0.0490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
sec-Butylbenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
4-Isopropyltoluene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,3-Dichlorobenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,4-Dichlorobenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
n-Butylbenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2-Dichlorobenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2,4-Trimethylbenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Hexachlorobutadiene	ND	0.0980		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Naphthalene	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2,3-Trichlorobenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Surr: 1-Bromo-4-fluorobenzene	100	63.1-141		%REC	1	10/16/2012 3:27:00 PM
Surr: Dibromofluoromethane	98.1	67.6-119		%REC	1	10/16/2012 3:27:00 PM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/16/2012 3:27:00 PM
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Arsenic	2.42	0.0798		mg/Kg-dry	1	10/17/2012 1:22:40 AM
Barium	67.1	0.399		mg/Kg-dry	1	10/17/2012 1:22:40 AM
Cadmium	ND	0.160		mg/Kg-dry	1	10/17/2012 1:22:40 AM
Chromium	43.6	0.0798		mg/Kg-dry	1	10/17/2012 1:22:40 AM
Lead	3.02	0.160		mg/Kg-dry	1	10/17/2012 1:22:40 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/8/2012 1:25:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-133 **Matrix:** Soil
Client Sample ID: B21-14-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3449		Analyst: SG
Selenium	ND	0.399		mg/Kg-dry	1	10/17/2012 1:22:40 AM
Silver	ND	0.0798		mg/Kg-dry	1	10/17/2012 1:22:40 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.274		mg/Kg-dry	1	10/18/2012 12:09:14 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	15.4			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 1:40:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-137
Matrix: Soil
Client Sample ID: B21-14-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	21.4		mg/Kg-dry	1	10/17/2012 11:06:00 PM
Heavy Oil	ND	53.5		mg/Kg-dry	1	10/17/2012 11:06:00 PM
Surr: 2-Fluorobiphenyl	107	50-150		%REC	1	10/17/2012 11:06:00 PM
Surr: o-Terphenyl	99.4	50-150		%REC	1	10/17/2012 11:06:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.15		mg/Kg-dry	1	10/17/2012 4:17:00 AM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 4:17:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 4:17:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0206		mg/Kg-dry	1	10/17/2012 4:17:00 AM
Toluene	ND	0.0206		mg/Kg-dry	1	10/17/2012 4:17:00 AM
Ethylbenzene	ND	0.0309		mg/Kg-dry	1	10/17/2012 4:17:00 AM
m,p-Xylene	ND	0.0206		mg/Kg-dry	1	10/17/2012 4:17:00 AM
o-Xylene	ND	0.0206		mg/Kg-dry	1	10/17/2012 4:17:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.0	63.1-141		%REC	1	10/17/2012 4:17:00 AM
Surr: Dibromofluoromethane	100	67.6-119		%REC	1	10/17/2012 4:17:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/17/2012 4:17:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	3.44	0.114		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Barium	90.4	0.568		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Cadmium	ND	0.227		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Chromium	48.2	0.114		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Lead	3.80	0.227		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Selenium	0.736	0.568		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Silver	ND	0.114		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.222		mg/Kg-dry	1	10/18/2012 12:10:51 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 1:40:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-137
Matrix: Soil
Client Sample ID: B21-14-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	12.0			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 2:30:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-146
Matrix: Soil
Client Sample ID: B21-15-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	20.6		mg/Kg-dry	1	10/16/2012 8:17:00 PM
Heavy Oil	ND	51.5		mg/Kg-dry	1	10/16/2012 8:17:00 PM
Surr: 2-Fluorobiphenyl	104	50-150		%REC	1	10/16/2012 8:17:00 PM
Surr: o-Terphenyl	104	50-150		%REC	1	10/16/2012 8:17:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3448		Analyst: PH
Naphthalene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
2-Methylnaphthalene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
1-Methylnaphthalene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Acenaphthylene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Acenaphthene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Fluorene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Phenanthrene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Anthracene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Fluoranthene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Pyrene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Benz(a)anthracene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Chrysene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Benzo(b)fluoranthene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Benzo(k)fluoranthene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Benzo(a)pyrene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Indeno(1,2,3-cd)pyrene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Dibenz(a,h)anthracene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Benzo(g,h,i)perylene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Surr: 2-Fluorobiphenyl	100	50.4-142		%REC	1	10/18/2012 2:50:00 AM
Surr: Terphenyl-d14 (surr)	117	48.8-157		%REC	1	10/18/2012 2:50:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.11		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 4:47:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 4:47:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 2:30:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-146
Matrix: Soil
Client Sample ID: B21-15-5.0

Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452 Analyst: EM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0613		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Chloromethane	ND	0.0613		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Vinyl chloride	ND	0.00204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Bromomethane	ND	0.0919		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Chloroethane	ND	0.0613		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1-Dichloroethene	ND	0.0511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Methylene chloride	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
trans-1,2-Dichloroethene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1-Dichloroethane	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
2,2-Dichloropropane	ND	0.0511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
cis-1,2-Dichloroethene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Chloroform	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1-Dichloropropene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Carbon tetrachloride	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2-Dichloroethane	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Benzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Trichloroethene (TCE)	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2-Dichloropropane	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Bromodichloromethane	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Dibromomethane	ND	0.0409		mg/Kg-dry	1	10/17/2012 4:47:00 AM
cis-1,3-Dichloropropene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Toluene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
trans-1,3-Dichloropropene	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1,2-Trichloroethane	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,3-Dichloropropane	ND	0.0511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Tetrachloroethene (PCE)	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Dibromochloromethane	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2-Dibromoethane (EDB)	ND	0.00511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Chlorobenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Ethylbenzene	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
m,p-Xylene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 2:30:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-146
Matrix: Soil
Client Sample ID: B21-15-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
o-Xylene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Styrene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Isopropylbenzene	ND	0.0817		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Bromoform	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
n-Propylbenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Bromobenzene	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,3,5-Trimethylbenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
2-Chlorotoluene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
4-Chlorotoluene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
tert-Butylbenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2,3-Trichloropropane	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2,4-Trichlorobenzene	ND	0.0511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
sec-Butylbenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
4-Isopropyltoluene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,3-Dichlorobenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,4-Dichlorobenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
n-Butylbenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2-Dichlorobenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2,4-Trimethylbenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Hexachlorobutadiene	ND	0.102		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Naphthalene	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2,3-Trichlorobenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Surr: 1-Bromo-4-fluorobenzene	100	63.1-141		%REC	1	10/17/2012 4:47:00 AM
Surr: Dibromofluoromethane	100	67.6-119		%REC	1	10/17/2012 4:47:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/17/2012 4:47:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	3.14	0.0890		mg/Kg-dry	1	10/17/2012 3:23:01 AM
Barium	71.8	0.445		mg/Kg-dry	1	10/17/2012 3:23:01 AM
Cadmium	ND	0.178		mg/Kg-dry	1	10/17/2012 3:23:01 AM
Chromium	41.7	0.0890		mg/Kg-dry	1	10/17/2012 3:23:01 AM
Lead	2.74	0.178		mg/Kg-dry	1	10/17/2012 3:23:01 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 2:30:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-146
Matrix: Soil
Client Sample ID: B21-15-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Selenium	ND	0.445		mg/Kg-dry	1	10/17/2012 3:23:01 AM
Silver	ND	0.0890		mg/Kg-dry	1	10/17/2012 3:23:01 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.269		mg/Kg-dry	1	10/18/2012 12:12:28 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	15.5			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 2:40:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-149
Matrix: Soil
Client Sample ID: B21-15-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	19.1		mg/Kg-dry	1	10/16/2012 9:11:00 PM
Heavy Oil	ND	47.7		mg/Kg-dry	1	10/16/2012 9:11:00 PM
Surr: 2-Fluorobiphenyl	95.6	50-150		%REC	1	10/16/2012 9:11:00 PM
Surr: o-Terphenyl	94.8	50-150		%REC	1	10/16/2012 9:11:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	6.07		mg/Kg-dry	1	10/17/2012 5:46:00 AM
Surr: 1,2-Dichloroethane-d4	112	65-135		%REC	1	10/17/2012 5:46:00 AM
Surr: Fluorobenzene	102	65-135		%REC	1	10/17/2012 5:46:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0243		mg/Kg-dry	1	10/17/2012 5:46:00 AM
Toluene	ND	0.0243		mg/Kg-dry	1	10/17/2012 5:46:00 AM
Ethylbenzene	ND	0.0364		mg/Kg-dry	1	10/17/2012 5:46:00 AM
m,p-Xylene	ND	0.0243		mg/Kg-dry	1	10/17/2012 5:46:00 AM
o-Xylene	ND	0.0243		mg/Kg-dry	1	10/17/2012 5:46:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.4	63.1-141		%REC	1	10/17/2012 5:46:00 AM
Surr: Dibromofluoromethane	99.4	67.6-119		%REC	1	10/17/2012 5:46:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/17/2012 5:46:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	1.39	0.0855		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Barium	44.1	0.427		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Cadmium	ND	0.171		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Chromium	31.3	0.0855		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Lead	1.47	0.171		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Selenium	ND	0.427		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Silver	ND	0.0855		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.277		mg/Kg-dry	1	10/18/2012 12:53:56 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 2:40:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-149
Matrix: Soil
Client Sample ID: B21-15-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	7.89			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/8/2012 3:15:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-157 **Matrix:** Soil

Client Sample ID: B21-16-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	22.1		mg/Kg-dry	1	10/16/2012 9:38:00 PM
Heavy Oil	ND	55.3		mg/Kg-dry	1	10/16/2012 9:38:00 PM
Surr: 2-Fluorobiphenyl	102	50-150		%REC	1	10/16/2012 9:38:00 PM
Surr: o-Terphenyl	103	50-150		%REC	1	10/16/2012 9:38:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3448		Analyst: PH
Naphthalene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
2-Methylnaphthalene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
1-Methylnaphthalene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Acenaphthylene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Acenaphthene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Fluorene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Phenanthrene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Anthracene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Fluoranthene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Pyrene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Benz(a)anthracene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Chrysene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Benzo(b)fluoranthene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Benzo(k)fluoranthene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Benzo(a)pyrene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Indeno(1,2,3-cd)pyrene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Dibenz(a,h)anthracene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Benzo(g,h,i)perylene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Surr: 2-Fluorobiphenyl	123	50.4-142		%REC	1	10/18/2012 3:15:00 AM
Surr: Terphenyl-d14 (surr)	119	48.8-157		%REC	1	10/18/2012 3:15:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.05		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Surr: 1,2-Dichloroethane-d4	109	65-135		%REC	1	10/17/2012 7:14:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 7:14:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 3:15:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-157
Matrix: Soil
Client Sample ID: B21-16-2.5

Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452 Analyst: EM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0606		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Chloromethane	ND	0.0606		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Vinyl chloride	ND	0.00202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Bromomethane	ND	0.0909		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Chloroethane	ND	0.0606		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1-Dichloroethene	ND	0.0505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Methylene chloride	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
trans-1,2-Dichloroethene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1-Dichloroethane	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
2,2-Dichloropropane	ND	0.0505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
cis-1,2-Dichloroethene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Chloroform	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1-Dichloropropene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Carbon tetrachloride	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2-Dichloroethane	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Benzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Trichloroethene (TCE)	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2-Dichloropropane	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Bromodichloromethane	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Dibromomethane	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:14:00 AM
cis-1,3-Dichloropropene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Toluene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
trans-1,3-Dichloropropene	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1,2-Trichloroethane	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,3-Dichloropropane	ND	0.0505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Tetrachloroethene (PCE)	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Dibromochloromethane	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2-Dibromoethane (EDB)	ND	0.00505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Chlorobenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Ethylbenzene	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
m,p-Xylene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 3:15:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-157
Matrix: Soil
Client Sample ID: B21-16-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
o-Xylene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Styrene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Isopropylbenzene	ND	0.0808		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Bromoform	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
n-Propylbenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Bromobenzene	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,3,5-Trimethylbenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
2-Chlorotoluene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
4-Chlorotoluene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
tert-Butylbenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2,3-Trichloropropane	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2,4-Trichlorobenzene	ND	0.0505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
sec-Butylbenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
4-Isopropyltoluene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,3-Dichlorobenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,4-Dichlorobenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
n-Butylbenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2-Dichlorobenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2,4-Trimethylbenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Hexachlorobutadiene	ND	0.101		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Naphthalene	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2,3-Trichlorobenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Surr: 1-Bromo-4-fluorobenzene	98.4	63.1-141		%REC	1	10/17/2012 7:14:00 AM
Surr: Dibromofluoromethane	98.0	67.6-119		%REC	1	10/17/2012 7:14:00 AM
Surr: Toluene-d8	99.7	78.5-126		%REC	1	10/17/2012 7:14:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	5.54	0.0972		mg/Kg-dry	1	10/17/2012 4:00:09 AM
Barium	130	0.486		mg/Kg-dry	1	10/17/2012 4:00:09 AM
Cadmium	ND	0.194		mg/Kg-dry	1	10/17/2012 4:00:09 AM
Chromium	61.9	0.0972		mg/Kg-dry	1	10/17/2012 4:00:09 AM
Lead	11.1	0.194		mg/Kg-dry	1	10/17/2012 4:00:09 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 3:15:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-157
Matrix: Soil
Client Sample ID: B21-16-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Selenium	ND	0.486		mg/Kg-dry	1	10/17/2012 4:00:09 AM
Silver	ND	0.0972		mg/Kg-dry	1	10/17/2012 4:00:09 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.287		mg/Kg-dry	1	10/18/2012 12:55:33 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	17.7			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/8/2012 3:25:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-160 **Matrix:** Soil

Client Sample ID: B21-16-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	19.5		mg/Kg-dry	1	10/16/2012 10:05:00 PM
Heavy Oil	ND	48.7		mg/Kg-dry	1	10/16/2012 10:05:00 PM
Surr: 2-Fluorobiphenyl	101	50-150		%REC	1	10/16/2012 10:05:00 PM
Surr: o-Terphenyl	102	50-150		%REC	1	10/16/2012 10:05:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	6.73		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 7:44:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 7:44:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0808		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Chloromethane	ND	0.0808		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Vinyl chloride	ND	0.00269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Bromomethane	ND	0.121		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Chloroethane	ND	0.0808		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1-Dichloroethene	ND	0.0673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Methylene chloride	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
trans-1,2-Dichloroethene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1-Dichloroethane	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
2,2-Dichloropropane	ND	0.0673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
cis-1,2-Dichloroethene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Chloroform	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1-Dichloropropene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Carbon tetrachloride	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2-Dichloroethane	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Benzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Trichloroethene (TCE)	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2-Dichloropropane	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Bromodichloromethane	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 3:25:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-160
Matrix: Soil
Client Sample ID: B21-16-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Dibromomethane	ND	0.0538		mg/Kg-dry	1	10/17/2012 7:44:00 AM
cis-1,3-Dichloropropene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Toluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
trans-1,3-Dichloropropene	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1,2-Trichloroethane	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,3-Dichloropropane	ND	0.0673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Tetrachloroethene (PCE)	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Dibromochloromethane	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2-Dibromoethane (EDB)	ND	0.00673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Chlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Ethylbenzene	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
m,p-Xylene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
o-Xylene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Styrene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Isopropylbenzene	ND	0.108		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Bromoform	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
n-Propylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Bromobenzene	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,3,5-Trimethylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
2-Chlorotoluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
4-Chlorotoluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
tert-Butylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2,3-Trichloropropane	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2,4-Trichlorobenzene	ND	0.0673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
sec-Butylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
4-Isopropyltoluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,3-Dichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,4-Dichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
n-Butylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2-Dichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2,4-Trimethylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Hexachlorobutadiene	ND	0.135		mg/Kg-dry	1	10/17/2012 7:44:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 3:25:00 PM
Project: Rufus 2.0 WO11
Lab ID: 1210020-160
Matrix: Soil
Client Sample ID: B21-16-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Naphthalene	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2,3-Trichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.8	63.1-141		%REC	1	10/17/2012 7:44:00 AM
Surr: Dibromofluoromethane	101	67.6-119		%REC	1	10/17/2012 7:44:00 AM
Surr: Toluene-d8	105	78.5-126		%REC	1	10/17/2012 7:44:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	1.15	0.0837		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Barium	36.5	0.419		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Cadmium	ND	0.167		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Chromium	26.5	0.0837		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Lead	1.20	0.167		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Selenium	ND	0.419		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Silver	ND	0.0837		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.232		mg/Kg-dry	1	10/18/2012 12:57:09 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	3.70			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/10/2012 8:25:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-218
Matrix: Soil
Client Sample ID: MW21-1-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	18.4		mg/Kg-dry	1	10/16/2012 10:32:00 PM
Heavy Oil	ND	46.1		mg/Kg-dry	1	10/16/2012 10:32:00 PM
Surr: 2-Fluorobiphenyl	99.3	50-150		%REC	1	10/16/2012 10:32:00 PM
Surr: o-Terphenyl	101	50-150		%REC	1	10/16/2012 10:32:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3448		Analyst: PH
Naphthalene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
2-Methylnaphthalene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
1-Methylnaphthalene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Acenaphthylene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Acenaphthene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Fluorene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Phenanthrene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Anthracene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Fluoranthene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Pyrene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Benz(a)anthracene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Chrysene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Benzo(b)fluoranthene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Benzo(k)fluoranthene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Benzo(a)pyrene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Indeno(1,2,3-cd)pyrene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Dibenz(a,h)anthracene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Benzo(g,h,i)perylene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Surr: 2-Fluorobiphenyl	97.6	50.4-142		%REC	1	10/18/2012 3:40:00 AM
Surr: Terphenyl-d14 (surr)	103	48.8-157		%REC	1	10/18/2012 3:40:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	6.72		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Surr: 1,2-Dichloroethane-d4	110	65-135		%REC	1	10/17/2012 8:14:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 8:14:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/10/2012 8:25:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-218
Matrix: Soil
Client Sample ID: MW21-1-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0807		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Chloromethane	ND	0.0807		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Vinyl chloride	ND	0.00269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Bromomethane	ND	0.121		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Chloroethane	ND	0.0807		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1-Dichloroethene	ND	0.0672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Methylene chloride	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
trans-1,2-Dichloroethene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1-Dichloroethane	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
2,2-Dichloropropane	ND	0.0672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
cis-1,2-Dichloroethene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Chloroform	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1-Dichloropropene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Carbon tetrachloride	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2-Dichloroethane	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Benzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Trichloroethene (TCE)	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2-Dichloropropane	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Bromodichloromethane	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Dibromomethane	ND	0.0538		mg/Kg-dry	1	10/17/2012 8:14:00 AM
cis-1,3-Dichloropropene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Toluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
trans-1,3-Dichloropropene	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1,2-Trichloroethane	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,3-Dichloropropane	ND	0.0672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Tetrachloroethene (PCE)	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Dibromochloromethane	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2-Dibromoethane (EDB)	ND	0.00672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Chlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Ethylbenzene	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
m,p-Xylene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/10/2012 8:25:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-218
Matrix: Soil
Client Sample ID: **MW21-1-5.0**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
o-Xylene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Styrene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Isopropylbenzene	ND	0.108		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Bromoform	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
n-Propylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Bromobenzene	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,3,5-Trimethylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
2-Chlorotoluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
4-Chlorotoluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
tert-Butylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2,3-Trichloropropane	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2,4-Trichlorobenzene	ND	0.0672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
sec-Butylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
4-Isopropyltoluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,3-Dichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,4-Dichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
n-Butylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2-Dichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2,4-Trimethylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Hexachlorobutadiene	ND	0.134		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Naphthalene	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2,3-Trichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.4	63.1-141		%REC	1	10/17/2012 8:14:00 AM
Surr: Dibromofluoromethane	99.2	67.6-119		%REC	1	10/17/2012 8:14:00 AM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/17/2012 8:14:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	0.891	0.0900		mg/Kg-dry	1	10/17/2012 4:18:15 AM
Barium	43.0	0.450		mg/Kg-dry	1	10/17/2012 4:18:15 AM
Cadmium	ND	0.180		mg/Kg-dry	1	10/17/2012 4:18:15 AM
Chromium	31.9	0.0900		mg/Kg-dry	1	10/17/2012 4:18:15 AM
Lead	1.32	0.180		mg/Kg-dry	1	10/17/2012 4:18:15 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/10/2012 8:25:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-218
Matrix: Soil
Client Sample ID: MW21-1-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Selenium	ND	0.450		mg/Kg-dry	1	10/17/2012 4:18:15 AM
Silver	ND	0.0900		mg/Kg-dry	1	10/17/2012 4:18:15 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.264		mg/Kg-dry	1	10/18/2012 12:58:46 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	3.39			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/10/2012 8:55:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-223 **Matrix:** Soil

Client Sample ID: MW21-1-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	20.2		mg/Kg-dry	1	10/16/2012 10:59:00 PM
Heavy Oil	ND	50.6		mg/Kg-dry	1	10/16/2012 10:59:00 PM
Surr: 2-Fluorobiphenyl	99.5	50-150		%REC	1	10/16/2012 10:59:00 PM
Surr: o-Terphenyl	101	50-150		%REC	1	10/16/2012 10:59:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3448		Analyst: PH
Naphthalene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
2-Methylnaphthalene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
1-Methylnaphthalene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Acenaphthylene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Acenaphthene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Fluorene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Phenanthrene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Anthracene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Fluoranthene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Pyrene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Benz(a)anthracene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Chrysene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Benzo(b)fluoranthene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Benzo(k)fluoranthene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Benzo(a)pyrene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Indeno(1,2,3-cd)pyrene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Dibenz(a,h)anthracene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Benzo(g,h,i)perylene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Surr: 2-Fluorobiphenyl	133	50.4-142		%REC	1	10/18/2012 4:05:00 AM
Surr: Terphenyl-d14 (surr)	109	48.8-157		%REC	1	10/18/2012 4:05:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	8.68		mg/Kg-dry	1	10/17/2012 8:43:00 AM
Surr: 1,2-Dichloroethane-d4	110	65-135		%REC	1	10/17/2012 8:43:00 AM
Surr: Fluorobenzene	100	65-135		%REC	1	10/17/2012 8:43:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/10/2012 8:55:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-223
Matrix: Soil
Client Sample ID: MW21-1-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0347		mg/Kg-dry	1	10/17/2012 8:43:00 AM
Toluene	ND	0.0347		mg/Kg-dry	1	10/17/2012 8:43:00 AM
Ethylbenzene	ND	0.0521		mg/Kg-dry	1	10/17/2012 8:43:00 AM
m,p-Xylene	ND	0.0347		mg/Kg-dry	1	10/17/2012 8:43:00 AM
o-Xylene	ND	0.0347		mg/Kg-dry	1	10/17/2012 8:43:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/17/2012 8:43:00 AM
Surr: Dibromofluoromethane	99.8	67.6-119		%REC	1	10/17/2012 8:43:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/17/2012 8:43:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	3.97	0.0930		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Barium	125	0.465		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Cadmium	ND	0.186		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Chromium	73.3	0.0930		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Lead	4.79	0.186		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Selenium	ND	0.465		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Silver	ND	0.0930		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.242		mg/Kg-dry	1	10/18/2012 1:00:23 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	12.5			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/8/2012 8:37:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-231 **Matrix:** Soil

Client Sample ID: MW21-2-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	21.2		mg/Kg-dry	1	10/16/2012 11:26:00 PM
Heavy Oil	ND	53.1		mg/Kg-dry	1	10/16/2012 11:26:00 PM
Surr: 2-Fluorobiphenyl	98.8	50-150		%REC	1	10/16/2012 11:26:00 PM
Surr: o-Terphenyl	98.9	50-150		%REC	1	10/16/2012 11:26:00 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3448		Analyst: PH
Naphthalene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
2-Methylnaphthalene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
1-Methylnaphthalene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Acenaphthylene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Acenaphthene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Fluorene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Phenanthrene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Anthracene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Fluoranthene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Pyrene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Benz(a)anthracene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Chrysene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Benzo(b)fluoranthene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Benzo(k)fluoranthene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Benzo(a)pyrene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Indeno(1,2,3-cd)pyrene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Dibenz(a,h)anthracene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Benzo(g,h,i)perylene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Surr: 2-Fluorobiphenyl	103	50.4-142		%REC	1	10/18/2012 4:30:00 AM
Surr: Terphenyl-d14 (surr)	116	48.8-157		%REC	1	10/18/2012 4:30:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	4.22		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 9:13:00 AM
Surr: Fluorobenzene	99.5	65-135		%REC	1	10/17/2012 9:13:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 8:37:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-231
Matrix: Soil
Client Sample ID: MW21-2-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0507		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Chloromethane	ND	0.0507		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Vinyl chloride	ND	0.00169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Bromomethane	ND	0.0760		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Chloroethane	ND	0.0507		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1-Dichloroethene	ND	0.0422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Methylene chloride	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
trans-1,2-Dichloroethene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1-Dichloroethane	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
2,2-Dichloropropane	ND	0.0422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
cis-1,2-Dichloroethene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Chloroform	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1-Dichloropropene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Carbon tetrachloride	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2-Dichloroethane	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Benzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Trichloroethene (TCE)	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2-Dichloropropane	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Bromodichloromethane	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Dibromomethane	ND	0.0338		mg/Kg-dry	1	10/17/2012 9:13:00 AM
cis-1,3-Dichloropropene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Toluene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
trans-1,3-Dichloropropene	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1,2-Trichloroethane	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,3-Dichloropropane	ND	0.0422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Tetrachloroethene (PCE)	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Dibromochloromethane	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2-Dibromoethane (EDB)	ND	0.00422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Chlorobenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Ethylbenzene	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
m,p-Xylene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 8:37:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-231
Matrix: Soil
Client Sample ID: **MW21-2-7.5**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
o-Xylene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Styrene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Isopropylbenzene	ND	0.0676		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Bromoform	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
n-Propylbenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Bromobenzene	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,3,5-Trimethylbenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
2-Chlorotoluene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
4-Chlorotoluene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
tert-Butylbenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2,3-Trichloropropane	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2,4-Trichlorobenzene	ND	0.0422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
sec-Butylbenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
4-Isopropyltoluene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,3-Dichlorobenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,4-Dichlorobenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
n-Butylbenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2-Dichlorobenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2,4-Trimethylbenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Hexachlorobutadiene	ND	0.0845		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Naphthalene	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2,3-Trichlorobenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Surr: 1-Bromo-4-fluorobenzene	103	63.1-141		%REC	1	10/17/2012 9:13:00 AM
Surr: Dibromofluoromethane	100	67.6-119		%REC	1	10/17/2012 9:13:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/17/2012 9:13:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	3.09	0.0793		mg/Kg-dry	1	10/17/2012 4:36:21 AM
Barium	95.4	0.396		mg/Kg-dry	1	10/17/2012 4:36:21 AM
Cadmium	ND	0.159		mg/Kg-dry	1	10/17/2012 4:36:21 AM
Chromium	52.0	0.0793		mg/Kg-dry	1	10/17/2012 4:36:21 AM
Lead	3.41	0.159		mg/Kg-dry	1	10/17/2012 4:36:21 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 8:37:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-231
Matrix: Soil
Client Sample ID: MW21-2-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Selenium	ND	0.396		mg/Kg-dry	1	10/17/2012 4:36:21 AM
Silver	ND	0.0793		mg/Kg-dry	1	10/17/2012 4:36:21 AM
Mercury by EPA Method 7471				Batch ID: 3456		Analyst: MC
Mercury	ND	0.292		mg/Kg-dry	1	10/18/2012 1:02:01 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	17.6			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 9:23:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-236
Matrix: Soil
Client Sample ID: MW21-2-20.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	21.2		mg/Kg-dry	1	10/16/2012 11:52:00 PM
Heavy Oil	ND	53.1		mg/Kg-dry	1	10/16/2012 11:52:00 PM
Surr: 2-Fluorobiphenyl	108	50-150		%REC	1	10/16/2012 11:52:00 PM
Surr: o-Terphenyl	110	50-150		%REC	1	10/16/2012 11:52:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.62		mg/Kg-dry	1	10/17/2012 9:43:00 AM
Surr: 1,2-Dichloroethane-d4	110	65-135		%REC	1	10/17/2012 9:43:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 9:43:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0225		mg/Kg-dry	1	10/17/2012 9:43:00 AM
Toluene	ND	0.0225		mg/Kg-dry	1	10/17/2012 9:43:00 AM
Ethylbenzene	ND	0.0337		mg/Kg-dry	1	10/17/2012 9:43:00 AM
m,p-Xylene	ND	0.0225		mg/Kg-dry	1	10/17/2012 9:43:00 AM
o-Xylene	ND	0.0225		mg/Kg-dry	1	10/17/2012 9:43:00 AM
Surr: 1-Bromo-4-fluorobenzene	100	63.1-141		%REC	1	10/17/2012 9:43:00 AM
Surr: Dibromofluoromethane	102	67.6-119		%REC	1	10/17/2012 9:43:00 AM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/17/2012 9:43:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	2.01	0.0803		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Barium	80.1	0.401		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Cadmium	ND	0.161		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Chromium	29.8	0.0803		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Lead	1.68	0.161		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Selenium	ND	0.401		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Silver	ND	0.0803		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Mercury by EPA Method 7471				Batch ID: 3465		Analyst: SG
Mercury	ND	0.255		mg/Kg-dry	1	10/19/2012 12:29:03 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/8/2012 9:23:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-236
Matrix: Soil
Client Sample ID: **MW21-2-20.0**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	9.08			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/9/2012 8:12:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-241 **Matrix:** Soil

Client Sample ID: MW21-3-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	23.8		mg/Kg-dry	1	10/17/2012 12:19:00 AM
Heavy Oil	ND	59.4		mg/Kg-dry	1	10/17/2012 12:19:00 AM
Surr: 2-Fluorobiphenyl	106	50-150		%REC	1	10/17/2012 12:19:00 AM
Surr: o-Terphenyl	107	50-150		%REC	1	10/17/2012 12:19:00 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3448		Analyst: PH
Naphthalene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
2-Methylnaphthalene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
1-Methylnaphthalene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Acenaphthylene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Acenaphthene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Fluorene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Phenanthrene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Anthracene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Fluoranthene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Pyrene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Benz(a)anthracene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Chrysene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Benzo(b)fluoranthene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Benzo(k)fluoranthene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Benzo(a)pyrene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Indeno(1,2,3-cd)pyrene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Dibenz(a,h)anthracene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Benzo(g,h,i)perylene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Surr: 2-Fluorobiphenyl	99.7	50.4-142		%REC	1	10/18/2012 4:55:00 AM
Surr: Terphenyl-d14 (surr)	112	48.8-157		%REC	1	10/18/2012 4:55:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	7.79		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Surr: 1,2-Dichloroethane-d4	110	65-135		%REC	1	10/17/2012 10:13:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 10:13:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/9/2012 8:12:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-241
Matrix: Soil
Client Sample ID: MW21-3-2.5

Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452 Analyst: EM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0935		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Chloromethane	ND	0.0935		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Vinyl chloride	ND	0.00312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Bromomethane	ND	0.140		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Chloroethane	ND	0.0935		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1-Dichloroethene	ND	0.0779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Methylene chloride	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
trans-1,2-Dichloroethene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1-Dichloroethane	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
2,2-Dichloropropane	ND	0.0779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
cis-1,2-Dichloroethene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Chloroform	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1-Dichloropropene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Carbon tetrachloride	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2-Dichloroethane	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Benzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Trichloroethene (TCE)	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2-Dichloropropane	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Bromodichloromethane	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Dibromomethane	ND	0.0623		mg/Kg-dry	1	10/17/2012 10:13:00 AM
cis-1,3-Dichloropropene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Toluene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
trans-1,3-Dichloropropene	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1,2-Trichloroethane	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,3-Dichloropropane	ND	0.0779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Tetrachloroethene (PCE)	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Dibromochloromethane	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2-Dibromoethane (EDB)	ND	0.00779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Chlorobenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Ethylbenzene	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
m,p-Xylene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/9/2012 8:12:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-241
Matrix: Soil
Client Sample ID: **MW21-3-2.5**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
o-Xylene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Styrene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Isopropylbenzene	ND	0.125		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Bromoform	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
n-Propylbenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Bromobenzene	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,3,5-Trimethylbenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
2-Chlorotoluene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
4-Chlorotoluene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
tert-Butylbenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2,3-Trichloropropane	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2,4-Trichlorobenzene	ND	0.0779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
sec-Butylbenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
4-Isopropyltoluene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,3-Dichlorobenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,4-Dichlorobenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
n-Butylbenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2-Dichlorobenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2,4-Trimethylbenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Hexachlorobutadiene	ND	0.156		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Naphthalene	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2,3-Trichlorobenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/17/2012 10:13:00 AM
Surr: Dibromofluoromethane	99.0	67.6-119		%REC	1	10/17/2012 10:13:00 AM
Surr: Toluene-d8	102	78.5-126		%REC	1	10/17/2012 10:13:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	5.11	0.0918		mg/Kg-dry	1	10/17/2012 4:54:27 AM
Barium	175	0.459		mg/Kg-dry	1	10/17/2012 4:54:27 AM
Cadmium	ND	0.184		mg/Kg-dry	1	10/17/2012 4:54:27 AM
Chromium	63.3	0.0918		mg/Kg-dry	1	10/17/2012 4:54:27 AM
Lead	8.17	0.184		mg/Kg-dry	1	10/17/2012 4:54:27 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/9/2012 8:12:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-241
Matrix: Soil
Client Sample ID: MW21-3-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Selenium	ND	0.459		mg/Kg-dry	1	10/17/2012 4:54:27 AM
Silver	ND	0.0918		mg/Kg-dry	1	10/17/2012 4:54:27 AM
Mercury by EPA Method 7471				Batch ID: 3465		Analyst: SG
Mercury	ND	0.270		mg/Kg-dry	1	10/19/2012 12:35:32 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	18.7			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/9/2012 9:18:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-250
Matrix: Soil
Client Sample ID: MW21-3-25.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	19.9		mg/Kg-dry	1	10/17/2012 12:46:00 AM
Heavy Oil	ND	49.8		mg/Kg-dry	1	10/17/2012 12:46:00 AM
Surr: 2-Fluorobiphenyl	101	50-150		%REC	1	10/17/2012 12:46:00 AM
Surr: o-Terphenyl	102	50-150		%REC	1	10/17/2012 12:46:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	4.90		mg/Kg-dry	1	10/17/2012 10:43:00 AM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 10:43:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 10:43:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0196		mg/Kg-dry	1	10/17/2012 10:43:00 AM
Toluene	ND	0.0196		mg/Kg-dry	1	10/17/2012 10:43:00 AM
Ethylbenzene	ND	0.0294		mg/Kg-dry	1	10/17/2012 10:43:00 AM
m,p-Xylene	ND	0.0196		mg/Kg-dry	1	10/17/2012 10:43:00 AM
o-Xylene	ND	0.0196		mg/Kg-dry	1	10/17/2012 10:43:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.8	63.1-141		%REC	1	10/17/2012 10:43:00 AM
Surr: Dibromofluoromethane	98.5	67.6-119		%REC	1	10/17/2012 10:43:00 AM
Surr: Toluene-d8	99.7	78.5-126		%REC	1	10/17/2012 10:43:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	1.34	0.0775		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Barium	28.5	0.387		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Cadmium	ND	0.155		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Chromium	28.0	0.0775		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Lead	1.31	0.155		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Selenium	ND	0.387		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Silver	ND	0.0775		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Mercury by EPA Method 7471				Batch ID: 3465		Analyst: SG
Mercury	ND	0.242		mg/Kg-dry	1	10/19/2012 12:37:08 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/9/2012 9:18:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-250
Matrix: Soil
Client Sample ID: MW21-3-25.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	7.82			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/4/2012 8:43:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-255 **Matrix:** Soil

Client Sample ID: B21-1-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	19.6		mg/Kg-dry	1	10/17/2012 1:13:00 AM
Heavy Oil	ND	49.1		mg/Kg-dry	1	10/17/2012 1:13:00 AM
Surr: 2-Fluorobiphenyl	104	50-150		%REC	1	10/17/2012 1:13:00 AM
Surr: o-Terphenyl	105	50-150		%REC	1	10/17/2012 1:13:00 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3448		Analyst: PH
Naphthalene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
2-Methylnaphthalene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
1-Methylnaphthalene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Acenaphthylene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Acenaphthene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Fluorene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Phenanthrene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Anthracene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Fluoranthene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Pyrene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Benz(a)anthracene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Chrysene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Benzo(b)fluoranthene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Benzo(k)fluoranthene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Benzo(a)pyrene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Indeno(1,2,3-cd)pyrene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Dibenz(a,h)anthracene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Benzo(g,h,i)perylene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Surr: 2-Fluorobiphenyl	109	50.4-142		%REC	1	10/18/2012 5:20:00 AM
Surr: Terphenyl-d14 (surr)	104	48.8-157		%REC	1	10/18/2012 5:20:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	4.36		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Surr: 1,2-Dichloroethane-d4	110	65-135		%REC	1	10/17/2012 11:13:00 AM
Surr: Fluorobenzene	102	65-135		%REC	1	10/17/2012 11:13:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/4/2012 8:43:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-255
Matrix: Soil
Client Sample ID: B21-1-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0523		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Chloromethane	ND	0.0523		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Vinyl chloride	ND	0.00174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Bromomethane	ND	0.0784		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Chloroethane	ND	0.0523		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1-Dichloroethene	ND	0.0436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Methylene chloride	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
trans-1,2-Dichloroethene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1-Dichloroethane	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
2,2-Dichloropropane	ND	0.0436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
cis-1,2-Dichloroethene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Chloroform	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1-Dichloropropene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Carbon tetrachloride	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2-Dichloroethane	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Benzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Trichloroethene (TCE)	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2-Dichloropropane	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Bromodichloromethane	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Dibromomethane	ND	0.0348		mg/Kg-dry	1	10/17/2012 11:13:00 AM
cis-1,3-Dichloropropene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Toluene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
trans-1,3-Dichloropropene	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1,2-Trichloroethane	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,3-Dichloropropane	ND	0.0436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Tetrachloroethene (PCE)	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Dibromochloromethane	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2-Dibromoethane (EDB)	ND	0.00436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Chlorobenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Ethylbenzene	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
m,p-Xylene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/4/2012 8:43:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-255
Matrix: Soil
Client Sample ID: B21-1-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
o-Xylene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Styrene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Isopropylbenzene	ND	0.0697		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Bromoform	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
n-Propylbenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Bromobenzene	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,3,5-Trimethylbenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
2-Chlorotoluene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
4-Chlorotoluene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
tert-Butylbenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2,3-Trichloropropane	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2,4-Trichlorobenzene	ND	0.0436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
sec-Butylbenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
4-Isopropyltoluene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,3-Dichlorobenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,4-Dichlorobenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
n-Butylbenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2-Dichlorobenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2,4-Trimethylbenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Hexachlorobutadiene	ND	0.0871		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Naphthalene	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2,3-Trichlorobenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Surr: 1-Bromo-4-fluorobenzene	102	63.1-141		%REC	1	10/17/2012 11:13:00 AM
Surr: Dibromofluoromethane	99.5	67.6-119		%REC	1	10/17/2012 11:13:00 AM
Surr: Toluene-d8	99.4	78.5-126		%REC	1	10/17/2012 11:13:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	2.84	0.0859		mg/Kg-dry	1	10/17/2012 5:12:33 AM
Barium	75.8	0.430		mg/Kg-dry	1	10/17/2012 5:12:33 AM
Cadmium	ND	0.172		mg/Kg-dry	1	10/17/2012 5:12:33 AM
Chromium	42.8	0.0859		mg/Kg-dry	1	10/17/2012 5:12:33 AM
Lead	2.64	0.172		mg/Kg-dry	1	10/17/2012 5:12:33 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/4/2012 8:43:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-255
Matrix: Soil
Client Sample ID: B21-1-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Selenium	ND	0.430		mg/Kg-dry	1	10/17/2012 5:12:33 AM
Silver	ND	0.0859		mg/Kg-dry	1	10/17/2012 5:12:33 AM
Mercury by EPA Method 7471				Batch ID: 3465		Analyst: SG
Mercury	ND	0.264		mg/Kg-dry	1	10/19/2012 12:38:43 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	12.5			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/4/2012 9:11:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-262
Matrix: Soil
Client Sample ID: B21-1-25.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	19.7		mg/Kg-dry	1	10/17/2012 1:40:00 AM
Heavy Oil	ND	49.3		mg/Kg-dry	1	10/17/2012 1:40:00 AM
Surr: 2-Fluorobiphenyl	97.3	50-150		%REC	1	10/17/2012 1:40:00 AM
Surr: o-Terphenyl	97.7	50-150		%REC	1	10/17/2012 1:40:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.49		mg/Kg-dry	1	10/17/2012 11:43:00 AM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 11:43:00 AM
Surr: Fluorobenzene	100	65-135		%REC	1	10/17/2012 11:43:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0220		mg/Kg-dry	1	10/17/2012 11:43:00 AM
Toluene	ND	0.0220		mg/Kg-dry	1	10/17/2012 11:43:00 AM
Ethylbenzene	ND	0.0329		mg/Kg-dry	1	10/17/2012 11:43:00 AM
m,p-Xylene	ND	0.0220		mg/Kg-dry	1	10/17/2012 11:43:00 AM
o-Xylene	ND	0.0220		mg/Kg-dry	1	10/17/2012 11:43:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.3	63.1-141		%REC	1	10/17/2012 11:43:00 AM
Surr: Dibromofluoromethane	100	67.6-119		%REC	1	10/17/2012 11:43:00 AM
Surr: Toluene-d8	102	78.5-126		%REC	1	10/17/2012 11:43:00 AM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	0.836	0.0782		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Barium	38.0	0.391		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Cadmium	ND	0.156		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Chromium	27.0	0.0782		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Lead	1.27	0.156		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Selenium	ND	0.391		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Silver	ND	0.0782		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Mercury by EPA Method 7471				Batch ID: 3465		Analyst: SG
Mercury	ND	0.232		mg/Kg-dry	1	10/19/2012 12:40:19 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/4/2012 9:11:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-262
Matrix: Soil
Client Sample ID: B21-1-25.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	7.29			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/11/2012 8:15:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-266 **Matrix:** Soil

Client Sample ID: B21-2-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	25.2		mg/Kg-dry	1	10/17/2012 2:07:00 AM
Heavy Oil	ND	63.0		mg/Kg-dry	1	10/17/2012 2:07:00 AM
Surr: 2-Fluorobiphenyl	93.8	50-150		%REC	1	10/17/2012 2:07:00 AM
Surr: o-Terphenyl	94.1	50-150		%REC	1	10/17/2012 2:07:00 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 3448		Analyst: PH
Naphthalene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
2-Methylnaphthalene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
1-Methylnaphthalene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Acenaphthylene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Acenaphthene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Fluorene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Phenanthrene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Anthracene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Fluoranthene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Pyrene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Benz(a)anthracene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Chrysene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Benzo(b)fluoranthene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Benzo(k)fluoranthene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Benzo(a)pyrene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Indeno(1,2,3-cd)pyrene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Dibenz(a,h)anthracene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Benzo(g,h,i)perylene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Surr: 2-Fluorobiphenyl	107	50.4-142		%REC	1	10/18/2012 5:45:00 AM
Surr: Terphenyl-d14 (surr)	110	48.8-157		%REC	1	10/18/2012 5:45:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.88		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Surr: 1,2-Dichloroethane-d4	110	65-135		%REC	1	10/17/2012 1:13:00 PM
Surr: Fluorobenzene	99.8	65-135		%REC	1	10/17/2012 1:13:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/11/2012 8:15:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-266
Matrix: Soil
Client Sample ID: B21-2-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0705		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Chloromethane	ND	0.0705		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Vinyl chloride	ND	0.00235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Bromomethane	ND	0.106		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Chloroethane	ND	0.0705		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1-Dichloroethene	ND	0.0588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Methylene chloride	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
trans-1,2-Dichloroethene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1-Dichloroethane	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
2,2-Dichloropropane	ND	0.0588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
cis-1,2-Dichloroethene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Chloroform	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1-Dichloropropene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Carbon tetrachloride	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2-Dichloroethane	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Benzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Trichloroethene (TCE)	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2-Dichloropropane	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Bromodichloromethane	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Dibromomethane	ND	0.0470		mg/Kg-dry	1	10/17/2012 1:13:00 PM
cis-1,3-Dichloropropene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Toluene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
trans-1,3-Dichloropropene	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1,2-Trichloroethane	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,3-Dichloropropane	ND	0.0588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Tetrachloroethene (PCE)	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Dibromochloromethane	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2-Dibromoethane (EDB)	ND	0.00588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Chlorobenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Ethylbenzene	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
m,p-Xylene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**

Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/11/2012 8:15:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-266 **Matrix:** Soil

Client Sample ID: B21-2-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
o-Xylene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Styrene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Isopropylbenzene	ND	0.0941		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Bromoform	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
n-Propylbenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Bromobenzene	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,3,5-Trimethylbenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
2-Chlorotoluene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
4-Chlorotoluene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
tert-Butylbenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2,3-Trichloropropane	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2,4-Trichlorobenzene	ND	0.0588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
sec-Butylbenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
4-Isopropyltoluene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,3-Dichlorobenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,4-Dichlorobenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
n-Butylbenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2-Dichlorobenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2,4-Trimethylbenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Hexachlorobutadiene	ND	0.118		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Naphthalene	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2,3-Trichlorobenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Surr: 1-Bromo-4-fluorobenzene	99.3	63.1-141		%REC	1	10/17/2012 1:13:00 PM
Surr: Dibromofluoromethane	100	67.6-119		%REC	1	10/17/2012 1:13:00 PM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/17/2012 1:13:00 PM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	6.37	0.102		mg/Kg-dry	1	10/17/2012 5:48:40 AM
Barium	126	0.509		mg/Kg-dry	1	10/17/2012 5:48:40 AM
Cadmium	ND	0.204		mg/Kg-dry	1	10/17/2012 5:48:40 AM
Chromium	59.3	0.102		mg/Kg-dry	1	10/17/2012 5:48:40 AM
Lead	4.76	0.204		mg/Kg-dry	1	10/17/2012 5:48:40 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/11/2012 8:15:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-266
Matrix: Soil
Client Sample ID: B21-2-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Selenium	ND	0.509		mg/Kg-dry	1	10/17/2012 5:48:40 AM
Silver	ND	0.102		mg/Kg-dry	1	10/17/2012 5:48:40 AM
Mercury by EPA Method 7471				Batch ID: 3465		Analyst: SG
Mercury	ND	0.309		mg/Kg-dry	1	10/19/2012 12:45:09 PM
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	22.1			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/11/2012 8:54:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-272
Matrix: Soil
Client Sample ID: B21-2-20.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	17.6		mg/Kg-dry	1	10/17/2012 2:33:00 AM
Heavy Oil	ND	44.1		mg/Kg-dry	1	10/17/2012 2:33:00 AM
Surr: 2-Fluorobiphenyl	100	50-150		%REC	1	10/17/2012 2:33:00 AM
Surr: o-Terphenyl	99.8	50-150		%REC	1	10/17/2012 2:33:00 AM
Gasoline by NWTPH-Gx				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.56		mg/Kg-dry	1	10/17/2012 1:43:00 PM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 1:43:00 PM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 1:43:00 PM
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0223		mg/Kg-dry	1	10/17/2012 1:43:00 PM
Toluene	ND	0.0223		mg/Kg-dry	1	10/17/2012 1:43:00 PM
Ethylbenzene	ND	0.0334		mg/Kg-dry	1	10/17/2012 1:43:00 PM
m,p-Xylene	ND	0.0223		mg/Kg-dry	1	10/17/2012 1:43:00 PM
o-Xylene	ND	0.0223		mg/Kg-dry	1	10/17/2012 1:43:00 PM
Surr: 1-Bromo-4-fluorobenzene	100	63.1-141		%REC	1	10/17/2012 1:43:00 PM
Surr: Dibromofluoromethane	102	67.6-119		%REC	1	10/17/2012 1:43:00 PM
Surr: Toluene-d8	99.9	78.5-126		%REC	1	10/17/2012 1:43:00 PM
Total Metals by EPA Method 6020				Batch ID: 3450		Analyst: SG
Arsenic	2.12	0.0813		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Barium	33.2	0.406		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Cadmium	ND	0.163		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Chromium	24.5	0.0813		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Lead	1.36	0.163		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Selenium	ND	0.406		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Silver	ND	0.0813		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Mercury by EPA Method 7471				Batch ID: 3465		Analyst: SG
Mercury	ND	0.229		mg/Kg-dry	1	10/19/2012 12:46:46 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210020**
Date Reported: **10/23/2012**

Client: GeoEngineers, Inc. - Redmond
Collection Date: 10/11/2012 8:54:00 AM
Project: Rufus 2.0 WO11
Lab ID: 1210020-272
Matrix: Soil
Client Sample ID: B21-2-20.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R6156		Analyst: CM
Percent Moisture	2.37			wt%	1	10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **MB-3449**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **10/16/2012**	RunNo: **6172**
Client ID: **MBLKS**	Batch ID: **3449**		Analysis Date: **10/16/2012**	SeqNo: **122802**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.100									
Barium	ND	0.500									
Cadmium	ND	0.200									
Chromium	ND	0.100									
Lead	ND	0.200									
Selenium	ND	0.500									
Silver	ND	0.100									

Sample ID: **LCS-3449**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **10/16/2012**	RunNo: **6172**
Client ID: **LCSS**	Batch ID: **3449**		Analysis Date: **10/16/2012**	SeqNo: **122803**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	108	0.100	102.0	0	106	69.41	130.39				
Barium	744	0.500	797.0	0	93.3	74.78	125.22				
Cadmium	91.9	0.200	86.50	0	106	73.18	127.17				
Chromium	228	0.100	208.0	0	109	70.67	129.33				
Lead	73.2	0.200	72.10	0	101	68.1	131.9				
Selenium	175	0.500	165.0	0	106	67.88	132.12				
Silver	22.3	0.100	31.30	0	71.3	65.18	134.82				

Sample ID: **1210020-003BDUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6172**
Client ID: **B21-3-7.5**	Batch ID: **3449**		Analysis Date: **10/16/2012**	SeqNo: **122806**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	5.39	0.0939						5.038	6.71	30	
Barium	147	0.469						160.1	8.55	30	
Cadmium	ND	0.188						0	0	30	
Chromium	69.9	0.0939						74.36	6.20	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1210020-003BDUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6172**
Client ID: **B21-3-7.5**	Batch ID: **3449**		Analysis Date: **10/16/2012**	SeqNo: **122806**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.60	0.188						5.407	3.56	30	
Selenium	ND	0.469						0	0	30	
Silver	ND	0.0939						0.1026	200	30	R

NOTES:
R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.

Sample ID: **1210020-003BMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6172**
Client ID: **B21-3-7.5**	Batch ID: **3449**		Analysis Date: **10/16/2012**	SeqNo: **122808**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	50.7	0.0860	43.00	5.038	106	75	125				
Barium	197	0.430	43.00	160.1	85.3	75	125				
Cadmium	2.19	0.172	2.150	0.1109	96.8	75	125				
Chromium	122	0.0860	43.00	74.36	111	75	125				
Lead	24.9	0.172	21.50	5.407	90.5	75	125				
Selenium	3.84	0.430	4.300	0.3452	81.2	75	125				
Silver	1.43	0.0860	2.150	0.1026	61.7	75	125				S

NOTES:
S - Low Ag spike recovery noted. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID: **1210020-003BMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6172**
Client ID: **B21-3-7.5**	Batch ID: **3449**		Analysis Date: **10/16/2012**	SeqNo: **122809**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	58.4	0.0987	49.37	5.038	108	75	125	50.69	14.2	30	
Barium	214	0.494	49.37	160.1	109	75	125	196.8	8.37	30	
Cadmium	2.52	0.197	2.469	0.1109	97.8	75	125	2.193	14.1	30	
Chromium	132	0.0987	49.37	74.36	116	75	125	122.3	7.47	30	
Lead	29.0	0.197	24.69	5.407	95.4	75	125	24.85	15.3	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1210020-003BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6172**
Client ID: **B21-3-7.5** Batch ID: **3449** Analysis Date: **10/16/2012** SeqNo: **122809**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	4.50	0.494	4.937	0.3452	84.2	75	125	3.836	15.9	30	
Silver	1.72	0.0987	2.469	0.1026	65.5	75	125	1.429	18.5	30	S

NOTES:
S - Low Ag spike recovery noted. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID: **1210020-003BPDS** SampType: **PDS** Units: **mg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6172**
Client ID: **B21-3-7.5** Batch ID: **3449** Analysis Date: **10/16/2012** SeqNo: **122810**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	2.54	0.0889	2.50	0.197	46.2	75	125				S

NOTES:
S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID: **MB-3450** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/16/2012** RunNo: **6190**
Client ID: **MBLKS** Batch ID: **3450** Analysis Date: **10/17/2012** SeqNo: **123152**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.100									
Barium	ND	0.500									
Cadmium	ND	0.200									
Chromium	ND	0.100									
Lead	ND	0.200									
Selenium	ND	0.500									
Silver	ND	0.100									

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **LCS-3450**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **10/16/2012**	RunNo: **6190**
Client ID: **LCSS**	Batch ID: **3450**		Analysis Date: **10/17/2012**	SeqNo: **123153**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	133	0.100	102.0	0	130	69.41	130.4				
Barium	817	0.500	797.0	0	102	74.78	125.2				
Cadmium	96.1	0.200	86.50	0	111	73.18	127.2				
Chromium	241	0.100	208.0	0	116	70.67	129.3				
Lead	76.2	0.200	72.10	0	106	68.1	131.9				
Selenium	184	0.500	165.0	0	112	67.88	132.1				
Silver	22.0	0.100	31.30	0	70.4	65.18	134.8				

Sample ID: **1210020-137BDUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6190**
Client ID: **B21-14-12.5**	Batch ID: **3450**		Analysis Date: **10/17/2012**	SeqNo: **123155**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	2.20	0.0854						3.436	43.9	30	R
Barium	71.3	0.427						90.45	23.7	30	
Cadmium	ND	0.171						0	0	30	
Chromium	41.5	0.0854						48.20	14.9	30	
Lead	2.55	0.171						3.803	39.5	30	R
Selenium	ND	0.427						0.7358	200	30	R
Silver	ND	0.0854						0	0	30	

NOTES:
R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.

Sample ID: **1210020-137BMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6190**
Client ID: **B21-14-12.5**	Batch ID: **3450**		Analysis Date: **10/17/2012**	SeqNo: **123157**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	51.5	0.0854	42.70	3.436	112	75	125				
Barium	100	0.427	42.70	90.45	22.6	75	125				S

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1210020-137BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6190**
Client ID: **B21-14-12.5** Batch ID: **3450** Analysis Date: **10/17/2012** SeqNo: **123157**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	2.27	0.171	2.135	0.1055	102	75	125				
Chromium	90.0	0.0854	42.70	48.20	98.0	75	125				
Lead	22.2	0.171	21.35	3.803	86.3	75	125				
Selenium	4.32	0.427	4.270	0.7358	83.9	75	125				
Silver	0.919	0.0854	2.135	0	43.1	75	125				S

NOTES:
S - Outlying spike recoveries observed. A duplicate analysis was performed with similar results indicating a matrix effect.

Sample ID: **1210020-137BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6190**
Client ID: **B21-14-12.5** Batch ID: **3450** Analysis Date: **10/17/2012** SeqNo: **123158**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	57.0	0.0901	45.07	3.436	119	75	125	51.45	10.2	30	
Barium	118	0.451	45.07	90.45	60.1	75	125	100.1	16.0	30	S
Cadmium	2.52	0.180	2.253	0.1055	107	75	125	2.272	10.5	30	
Chromium	99.2	0.0901	45.07	48.20	113	75	125	90.03	9.72	30	
Lead	24.8	0.180	22.53	3.803	93.2	75	125	22.23	10.9	30	
Selenium	4.93	0.451	4.507	0.7358	93.0	75	125	4.319	13.1	30	
Silver	1.10	0.0901	2.253	0	48.7	75	125	0.9191	17.6	30	S

NOTES:
S - Outlying spike recoveries observed. A duplicate analysis was performed with similar results indicating a matrix effect.

Sample ID: **1210020-137BPDS** SampType: **PDS** Units: **mg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6190**
Client ID: **B21-14-12.5** Batch ID: **3450** Analysis Date: **10/17/2012** SeqNo: **123159**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	264	0.447	50.0	159	61.4	75	125				S
Silver	1.03	0.0894	2.50	-0.0629	20.6	75	125				S

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1210020-137BPDS** SampType: **PDS** Units: **mg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6190**
Client ID: **B21-14-12.5** Batch ID: **3450** Analysis Date: **10/17/2012** SeqNo: **123159**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Outlying spike recoveries due to matrix interference.

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: **MB-3441**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **10/16/2012**	RunNo: **6170**
Client ID: **MBLKS**	Batch ID: **3441**		Analysis Date: **10/16/2012**	SeqNo: **122713**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-3441**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **10/16/2012**	RunNo: **6170**
Client ID: **LCSS**	Batch ID: **3441**		Analysis Date: **10/16/2012**	SeqNo: **122714**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.516	0.250	0.5000	0	103	80	120				

Sample ID: **1210099-001ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6170**
Client ID: **BATCH**	Batch ID: **3441**		Analysis Date: **10/16/2012**	SeqNo: **122716**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.330						0	0	20	R

NOTES:
R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.

Sample ID: **1210099-001AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6170**
Client ID: **BATCH**	Batch ID: **3441**		Analysis Date: **10/16/2012**	SeqNo: **122717**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.647	0.306	0.6124	0.05783	96.2	70	130				

Sample ID: **1210099-001AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6170**
Client ID: **BATCH**	Batch ID: **3441**		Analysis Date: **10/16/2012**	SeqNo: **122718**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.647	0.301	0.6017	0.05783	98.0	70	130	0.6467	0.106	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: **1210099-001AMSD**	SampType: **MSD**			Units: **mg/Kg-dry**		Prep Date: **10/16/2012**		RunNo: **6170**		
Client ID: **BATCH**	Batch ID: **3441**					Analysis Date: **10/16/2012**		SeqNo: **122718**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **MB-3456**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **10/17/2012**		RunNo: **6197**		
Client ID: **MBLKS**	Batch ID: **3456**					Analysis Date: **10/18/2012**		SeqNo: **123310**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-3456**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **10/17/2012**		RunNo: **6197**		
Client ID: **LCSS**	Batch ID: **3456**					Analysis Date: **10/18/2012**		SeqNo: **123311**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.494	0.250	0.5000	0	98.8	80	120				

Sample ID: **1210094-005BDUP**	SampType: **DUP**			Units: **mg/Kg-dry**		Prep Date: **10/17/2012**		RunNo: **6197**		
Client ID: **BATCH**	Batch ID: **3456**					Analysis Date: **10/18/2012**		SeqNo: **123313**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.218						0	0	20	

Sample ID: **1210094-005BMS**	SampType: **MS**			Units: **mg/Kg-dry**		Prep Date: **10/17/2012**		RunNo: **6197**		
Client ID: **BATCH**	Batch ID: **3456**					Analysis Date: **10/18/2012**		SeqNo: **123314**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.571	0.268	0.5359	0.02892	101	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: **1210094-005BMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **10/17/2012**	RunNo: **6197**
Client ID: **BATCH**	Batch ID: **3456**		Analysis Date: **10/18/2012**	SeqNo: **123315**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.628	0.278	0.5569	0.02892	108	70	130	0.5712	9.49	20	

Sample ID: **MB-3465**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **10/18/2012**	RunNo: **6224**
Client ID: **MBLKS**	Batch ID: **3465**		Analysis Date: **10/19/2012**	SeqNo: **123735**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-3465**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **10/18/2012**	RunNo: **6224**
Client ID: **LCSS**	Batch ID: **3465**		Analysis Date: **10/19/2012**	SeqNo: **123736**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.486	0.250	0.5000	0	97.2	80	120				

Sample ID: **1210020-236BMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **10/18/2012**	RunNo: **6224**
Client ID: **MW21-2-20.0**	Batch ID: **3465**		Analysis Date: **10/19/2012**	SeqNo: **123739**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.523	0.259	0.5188	0	101	70	130				

Sample ID: **1210020-236BMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **10/18/2012**	RunNo: **6224**
Client ID: **MW21-2-20.0**	Batch ID: **3465**		Analysis Date: **10/19/2012**	SeqNo: **123740**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.527	0.259	0.5188	0	102	70	130	0.5230	0.791	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Date: *10/23/2012*

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: **1210163-005BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/18/2012** RunNo: **6224**
Client ID: **BATCH** Batch ID: **3465** Analysis Date: **10/19/2012** SeqNo: **123750**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.294						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **1210020-146BDUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6247**
Client ID: **B21-15-5.0**	Batch ID: **3446**		Analysis Date: **10/16/2012**	SeqNo: **124091**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	22.9						0	0	30	
Heavy Oil	ND	57.1						0	0	30	
Surr: 2-Fluorobiphenyl	23.2		22.86		101	50	150		0		
Surr: o-Terphenyl	23.4		22.86		103	50	150		0		

Sample ID: **LCS-3446**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **10/16/2012**	RunNo: **6247**
Client ID: **LCSS**	Batch ID: **3446**		Analysis Date: **10/16/2012**	SeqNo: **124108**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	569	20.0	500.0	0	114	65	135				
Surr: 2-Fluorobiphenyl	21.8		20.00		109	50	150				
Surr: o-Terphenyl	21.3		20.00		106	50	150				

Sample ID: **MB-3446**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **10/16/2012**	RunNo: **6247**
Client ID: **MBLKS**	Batch ID: **3446**		Analysis Date: **10/16/2012**	SeqNo: **124109**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	20.8		20.00		104	50	150				
Surr: o-Terphenyl	21.1		20.00		106	50	150				

Sample ID: **1210020-003BDUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6249**
Client ID: **B21-3-7.5**	Batch ID: **3445**		Analysis Date: **10/17/2012**	SeqNo: **124134**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	24.8						0	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **1210020-003BDUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6249**
Client ID: **B21-3-7.5**	Batch ID: **3445**		Analysis Date: **10/17/2012**	SeqNo: **124134**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Heavy Oil	ND	62.1						0	0	30	
Surr: 2-Fluorobiphenyl	24.9		24.85		100	50	150		0		
Surr: o-Terphenyl	24.8		24.85		100	50	150		0		

Sample ID: **LCS-3445**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **10/16/2012**	RunNo: **6249**
Client ID: **LCSS**	Batch ID: **3445**		Analysis Date: **10/17/2012**	SeqNo: **124148**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	592	20.0	500.0	0	118	65	135				
Surr: 2-Fluorobiphenyl	21.7		20.00		109	50	150				
Surr: o-Terphenyl	20.7		20.00		103	50	150				

Sample ID: **MB-3445**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **10/16/2012**	RunNo: **6249**
Client ID: **MBLKS**	Batch ID: **3445**		Analysis Date: **10/17/2012**	SeqNo: **124149**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	20.7		20.00		103	50	150				
Surr: o-Terphenyl	21.0		20.00		105	50	150				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **MB-3448**	SampType: **MBLK**	Units: **µg/Kg**	Prep Date: **10/17/2012**	RunNo: **6192**
Client ID: **MBLKS**	Batch ID: **3448**		Analysis Date: **10/18/2012**	SeqNo: **123185**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	50.0									
2-Methylnaphthalene	ND	50.0									
1-Methylnaphthalene	ND	50.0									
Acenaphthylene	ND	50.0									
Acenaphthene	ND	50.0									
Fluorene	ND	50.0									
Phenanthrene	ND	50.0									
Anthracene	ND	50.0									
Fluoranthene	ND	50.0									
Pyrene	ND	50.0									
Benz(a)anthracene	ND	50.0									
Chrysene	ND	50.0									
Benzo(b)fluoranthene	ND	50.0									
Benzo(k)fluoranthene	ND	50.0									
Benzo(a)pyrene	ND	50.0									
Indeno(1,2,3-cd)pyrene	ND	50.0									
Dibenz(a,h)anthracene	ND	50.0									
Benzo(g,h,i)perylene	ND	50.0									
Surr: 2-Fluorobiphenyl	518		500.0		104	50.4	142				
Surr: Terphenyl-d14 (surr)	541		500.0		108	48.8	157				

Sample ID: **LCS-3448**	SampType: **LCS**	Units: **µg/Kg**	Prep Date: **10/17/2012**	RunNo: **6192**
Client ID: **LCSS**	Batch ID: **3448**		Analysis Date: **10/18/2012**	SeqNo: **123186**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	903	50.0	1,000	0	90.3	77.4	119				
2-Methylnaphthalene	953	50.0	1,000	0	95.3	77.1	122				
1-Methylnaphthalene	902	50.0	1,000	0	90.2	77.9	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCS-3448** SampType: **LCS** Units: **µg/Kg** Prep Date: **10/17/2012** RunNo: **6192**
Client ID: **LCSS** Batch ID: **3448** Analysis Date: **10/18/2012** SeqNo: **123186**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthylene	1,020	50.0	1,000	0	102	75.2	125				
Acenaphthene	896	50.0	1,000	0	89.6	76	120				
Fluorene	941	50.0	1,000	0	94.1	75.8	125				
Phenanthrene	891	50.0	1,000	0	89.1	74.2	121				
Anthracene	989	50.0	1,000	0	98.9	71.7	129				
Fluoranthene	1,050	50.0	1,000	0	105	68.3	135				
Pyrene	1,030	50.0	1,000	0	103	66.7	134				
Benz(a)anthracene	1,120	50.0	1,000	0	112	57.9	150				
Chrysene	888	50.0	1,000	0	88.8	76.1	123				
Benzo(b)fluoranthene	1,080	50.0	1,000	0	108	61.2	142				
Benzo(k)fluoranthene	862	50.0	1,000	0	86.2	68.1	134				
Benzo(a)pyrene	975	50.0	1,000	0	97.5	58.1	146				
Indeno(1,2,3-cd)pyrene	1,090	50.0	1,000	0	109	63.8	138				
Dibenz(a,h)anthracene	1,090	50.0	1,000	0	109	60.8	143				
Benzo(g,h,i)perylene	964	50.0	1,000	0	96.4	63.7	136				
Surr: 2-Fluorobiphenyl	517		500.0		103	50.4	142				
Surr: Terphenyl-d14 (surr)	540		500.0		108	48.8	157				

Sample ID: **1210020-115BMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **10/17/2012** RunNo: **6192**
Client ID: **B21-12-17.5** Batch ID: **3448** Analysis Date: **10/18/2012** SeqNo: **123188**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	896	49.7	994.3	0	90.1	42.9	138				
2-Methylnaphthalene	960	49.7	994.3	0	96.5	42.8	151				
1-Methylnaphthalene	937	49.7	994.3	0	94.2	41.6	148				
Acenaphthylene	1,330	49.7	994.3	0	134	32.6	160				
Acenaphthene	916	49.7	994.3	0	92.2	46.3	142				
Fluorene	1,010	49.7	994.3	0	102	43.4	153				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **1210020-115BMS**	SampType: **MS**	Units: **µg/Kg-dry**	Prep Date: **10/17/2012**	RunNo: **6192**
Client ID: **B21-12-17.5**	Batch ID: **3448**		Analysis Date: **10/18/2012**	SeqNo: **123188**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	907	49.7	994.3	0	91.2	45.5	140				
Anthracene	1,020	49.7	994.3	0	102	32.6	160				
Fluoranthene	1,120	49.7	994.3	0	112	44.6	161				
Pyrene	1,090	49.7	994.3	0	110	48.3	158				
Benz(a)anthracene	1,220	49.7	994.3	0	123	57.5	169				
Chrysene	919	49.7	994.3	0	92.4	45.2	146				
Benzo(b)fluoranthene	1,180	49.7	994.3	0	118	42.2	168				
Benzo(k)fluoranthene	895	49.7	994.3	0	90.1	48	161				
Benzo(a)pyrene	1,050	49.7	994.3	0	106	34.4	179				
Indeno(1,2,3-cd)pyrene	1,160	49.7	994.3	0	117	41.1	165				
Dibenz(a,h)anthracene	1,160	49.7	994.3	0	117	38.1	166				
Benzo(g,h,i)perylene	998	49.7	994.3	0	100	45.6	157				
Surr: 2-Fluorobiphenyl	567		497.1		114	50.4	142				
Surr: Terphenyl-d14 (surr)	556		497.1		112	48.8	157				

Sample ID: **1210020-121BDUP**	SampType: **DUP**	Units: **µg/Kg-dry**	Prep Date: **10/17/2012**	RunNo: **6192**
Client ID: **B21-13-2.5**	Batch ID: **3448**		Analysis Date: **10/18/2012**	SeqNo: **123202**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	55.0						0	0	30	
2-Methylnaphthalene	ND	55.0						0	0	30	
1-Methylnaphthalene	ND	55.0						0	0	30	
Acenaphthylene	ND	55.0						0	0	30	
Acenaphthene	ND	55.0						0	0	30	
Fluorene	ND	55.0						0	0	30	
Phenanthrene	ND	55.0						0	0	30	
Anthracene	ND	55.0						0	0	30	
Fluoranthene	ND	55.0						0	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **1210020-121BDUP** SampType: **DUP** Units: **µg/Kg-dry** Prep Date: **10/17/2012** RunNo: **6192**
Client ID: **B21-13-2.5** Batch ID: **3448** Analysis Date: **10/18/2012** SeqNo: **123202**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyrene	ND	55.0						0	0	30	
Benz(a)anthracene	ND	55.0						0	0	30	
Chrysene	ND	55.0						0	0	30	
Benzo(b)fluoranthene	ND	55.0						0	0	30	
Benzo(k)fluoranthene	ND	55.0						0	0	30	
Benzo(a)pyrene	ND	55.0						0	0	30	
Indeno(1,2,3-cd)pyrene	ND	55.0						0	0	30	
Dibenz(a,h)anthracene	ND	55.0						0	0	30	
Benzo(g,h,i)perylene	ND	55.0						0	0	30	
Surr: 2-Fluorobiphenyl	653		550.0		119	50.4	142		0		
Surr: Terphenyl-d14 (surr)	668		550.0		122	48.8	157		0		

Sample ID: **MB-3447** SampType: **MBLK** Units: **µg/Kg** Prep Date: **10/16/2012** RunNo: **6218**
Client ID: **MBLKS** Batch ID: **3447** Analysis Date: **10/18/2012** SeqNo: **123603**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	50.0									
2-Methylnaphthalene	ND	50.0									
1-Methylnaphthalene	ND	50.0									
Acenaphthylene	ND	50.0									
Acenaphthene	ND	50.0									
Fluorene	ND	50.0									
Phenanthrene	ND	50.0									
Anthracene	ND	50.0									
Fluoranthene	ND	50.0									
Pyrene	ND	50.0									
Benz(a)anthracene	ND	50.0									
Chrysene	ND	50.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **MB-3447** SampType: **MBLK** Units: **µg/Kg** Prep Date: **10/16/2012** RunNo: **6218**
Client ID: **MBLKS** Batch ID: **3447** Analysis Date: **10/18/2012** SeqNo: **123603**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(b)fluoranthene	ND	50.0									
Benzo(k)fluoranthene	ND	50.0									
Benzo(a)pyrene	ND	50.0									
Indeno(1,2,3-cd)pyrene	ND	50.0									
Dibenz(a,h)anthracene	ND	50.0									
Benzo(g,h,i)perylene	ND	50.0									
Surr: 2-Fluorobiphenyl	422		500.0		84.4	50.4	142				
Surr: Terphenyl-d14 (surr)	430		500.0		86.0	48.8	157				

Sample ID: **LCS-3447** SampType: **LCS** Units: **µg/Kg** Prep Date: **10/16/2012** RunNo: **6218**
Client ID: **LCSS** Batch ID: **3447** Analysis Date: **10/18/2012** SeqNo: **123604**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	985	50.0	1,000	0	98.5	77.4	119				
2-Methylnaphthalene	1,050	50.0	1,000	0	105	77.1	122				
1-Methylnaphthalene	1,020	50.0	1,000	0	102	77.9	120				
Acenaphthylene	1,140	50.0	1,000	0	114	75.2	125				
Acenaphthene	1,020	50.0	1,000	0	102	76	120				
Fluorene	1,020	50.0	1,000	0	102	75.8	125				
Phenanthrene	959	50.0	1,000	0	95.9	74.2	121				
Anthracene	1,070	50.0	1,000	0	107	71.7	129				
Fluoranthene	1,060	50.0	1,000	0	106	68.3	135				
Pyrene	1,050	50.0	1,000	0	105	66.7	134				
Benz(a)anthracene	1,120	50.0	1,000	0	112	57.9	150				
Chrysene	950	50.0	1,000	0	95.0	76.1	123				
Benzo(b)fluoranthene	1,080	50.0	1,000	0	108	61.2	142				
Benzo(k)fluoranthene	1,110	50.0	1,000	0	111	68.1	134				
Benzo(a)pyrene	1,030	50.0	1,000	0	103	58.1	146				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCS-3447**	SampType: **LCS**	Units: **µg/Kg**	Prep Date: **10/16/2012**	RunNo: **6218**
Client ID: **LCSS**	Batch ID: **3447**		Analysis Date: **10/18/2012**	SeqNo: **123604**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Indeno(1,2,3-cd)pyrene	1,130	50.0	1,000	0	113	63.8	138				
Dibenz(a,h)anthracene	1,120	50.0	1,000	0	112	60.8	143				
Benzo(g,h,i)perylene	1,010	50.0	1,000	0	101	63.7	136				
Surr: 2-Fluorobiphenyl	538		500.0		108	50.4	142				
Surr: Terphenyl-d14 (surr)	618		500.0		124	48.8	157				

Sample ID: **1210020-003BMS**	SampType: **MS**	Units: **µg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6218**
Client ID: **B21-3-7.5**	Batch ID: **3447**		Analysis Date: **10/18/2012**	SeqNo: **123606**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,140	59.8	1,196	0	95.3	42.9	138				
2-Methylnaphthalene	1,300	59.8	1,196	0	108	42.8	151				
1-Methylnaphthalene	1,290	59.8	1,196	0	108	41.6	148				
Acenaphthylene	1,590	59.8	1,196	0	133	32.6	160				
Acenaphthene	1,190	59.8	1,196	0	99.8	46.3	142				
Fluorene	1,240	59.8	1,196	0	103	43.4	153				
Phenanthrene	1,130	59.8	1,196	0	94.6	45.5	140				
Anthracene	1,270	59.8	1,196	0	106	32.6	160				
Fluoranthene	1,300	59.8	1,196	0	109	44.6	161				
Pyrene	1,280	59.8	1,196	0	107	48.3	158				
Benz(a)anthracene	1,430	59.8	1,196	0	120	57.5	169				
Chrysene	1,120	59.8	1,196	0	93.7	45.2	146				
Benzo(b)fluoranthene	1,340	59.8	1,196	0	112	42.2	168				
Benzo(k)fluoranthene	1,340	59.8	1,196	0	112	48	161				
Benzo(a)pyrene	1,270	59.8	1,196	0	106	34.4	179				
Indeno(1,2,3-cd)pyrene	1,370	59.8	1,196	0	115	41.1	165				
Dibenz(a,h)anthracene	1,370	59.8	1,196	0	114	38.1	166				
Benzo(g,h,i)perylene	1,200	59.8	1,196	0	101	45.6	157				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **1210020-003BMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6218**
Client ID: **B21-3-7.5** Batch ID: **3447** Analysis Date: **10/18/2012** SeqNo: **123606**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	642		598.0		107	50.4	142				
Surr: Terphenyl-d14 (surr)	730		598.0		122	48.8	157				

Sample ID: **1210020-014BDUP** SampType: **DUP** Units: **µg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6218**
Client ID: **B21-4-5.0** Batch ID: **3447** Analysis Date: **10/18/2012** SeqNo: **123608**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	52.3						0	0	30	
2-Methylnaphthalene	ND	52.3						0	0	30	
1-Methylnaphthalene	ND	52.3						0	0	30	
Acenaphthylene	ND	52.3						0	0	30	
Acenaphthene	ND	52.3						0	0	30	
Fluorene	ND	52.3						0	0	30	
Phenanthrene	ND	52.3						0	0	30	
Anthracene	ND	52.3						0	0	30	
Fluoranthene	ND	52.3						0	0	30	
Pyrene	ND	52.3						0	0	30	
Benz(a)anthracene	ND	52.3						0	0	30	
Chrysene	ND	52.3						0	0	30	
Benzo(b)fluoranthene	ND	52.3						0	0	30	
Benzo(k)fluoranthene	ND	52.3						0	0	30	
Benzo(a)pyrene	ND	52.3						0	0	30	
Indeno(1,2,3-cd)pyrene	ND	52.3						0	0	30	
Dibenz(a,h)anthracene	ND	52.3						0	0	30	
Benzo(g,h,i)perylene	ND	52.3						0	0	30	
Surr: 2-Fluorobiphenyl	378		523.4		72.2	50.4	142		0		
Surr: Terphenyl-d14 (surr)	367		523.4		70.0	48.8	157		0		

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **CCV-3447B** SampType: **CCV** Units: **µg/Kg** Prep Date: **10/19/2012** RunNo: **6218**
Client ID: **CCV** Batch ID: **3447** Analysis Date: **10/19/2012** SeqNo: **123774**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,070	50.0	1,000	0	107	80	120				
2-Methylnaphthalene	1,120	50.0	1,000	0	112	80	120				
1-Methylnaphthalene	1,110	50.0	1,000	0	111	80	120				
Acenaphthylene	1,190	50.0	1,000	0	119	80	120				
Acenaphthene	1,060	50.0	1,000	0	106	80	120				
Fluorene	1,110	50.0	1,000	0	111	80	120				
Phenanthrene	1,060	50.0	1,000	0	106	80	120				
Anthracene	1,160	50.0	1,000	0	116	80	120				
Fluoranthene	1,190	50.0	1,000	0	119	80	120				
Pyrene	1,170	50.0	1,000	0	117	80	120				
Benz(a)anthracene	1,130	50.0	1,000	0	113	80	120				
Chrysene	1,050	50.0	1,000	0	105	80	120				
Benzo(b)fluoranthene	869	50.0	1,000	0	86.9	80	120				
Benzo(k)fluoranthene	1,180	50.0	1,000	0	118	80	120				
Benzo(a)pyrene	891	50.0	1,000	0	89.1	80	120				
Indeno(1,2,3-cd)pyrene	933	50.0	1,000	0	93.3	80	120				
Dibenz(a,h)anthracene	894	50.0	1,000	0	89.4	80	120				
Benzo(g,h,i)perylene	957	50.0	1,000	0	95.7	80	120				
Surr: 2-Fluorobiphenyl	500		500.0		100	50.4	142				
Surr: Terphenyl-d14 (surr)	529		500.0		106	48.8	157				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **1210020-003ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/15/2012**	RunNo: **6222**
Client ID: **B21-3-7.5**	Batch ID: **R6222**		Analysis Date: **10/16/2012**	SeqNo: **123688**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.92						0	0	30	
Surr: 1,2-Dichloroethane-d4	0.633		0.5922		107	65	135		0		
Surr: Fluorobenzene	0.596		0.5922		101	65	135		0		

Sample ID: **LCS-R6222**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **10/15/2012**	RunNo: **6222**
Client ID: **LCSS**	Batch ID: **R6222**		Analysis Date: **10/16/2012**	SeqNo: **123710**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	21.9	5.00	25.00	0	87.5	65	135				
Surr: 1,2-Dichloroethane-d4	0.534		0.5000		107	65	135				
Surr: Fluorobenzene	0.505		0.5000		101	65	135				

Sample ID: **MB-R6222**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **10/15/2012**	RunNo: **6222**
Client ID: **MBLKS**	Batch ID: **R6222**		Analysis Date: **10/16/2012**	SeqNo: **123711**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.00									
Surr: 1,2-Dichloroethane-d4	0.540		0.5000		108	65	135				
Surr: Fluorobenzene	0.497		0.5000		99.4	65	135				

Sample ID: **1210020-146ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6251**
Client ID: **B21-15-5.0**	Batch ID: **R6251**		Analysis Date: **10/17/2012**	SeqNo: **124177**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.11						0	0	30	
Surr: 1,2-Dichloroethane-d4	0.569		0.5108		111	65	135		0		
Surr: Fluorobenzene	0.514		0.5108		101	65	135		0		

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Date: *10/23/2012*

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **1210020-146ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/16/2012**	RunNo: **6251**
Client ID: **B21-15-5.0**	Batch ID: **R6251**		Analysis Date: **10/17/2012**	SeqNo: **124177**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **MB-R6251**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **10/16/2012**	RunNo: **6251**
Client ID: **MBLKS**	Batch ID: **R6251**		Analysis Date: **10/17/2012**	SeqNo: **124196**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.00									
Surr: 1,2-Dichloroethane-d4	0.564		0.5000		113	65	135				
Surr: Fluorobenzene	0.516		0.5000		103	65	135				

Sample ID: **LCS-R6251**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **10/16/2012**	RunNo: **6251**
Client ID: **LCSS**	Batch ID: **R6251**		Analysis Date: **10/17/2012**	SeqNo: **124198**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	19.5	5.00	25.00	0	78.1	65	135				
Surr: 1,2-Dichloroethane-d4	0.542		0.5000		108	65	135				
Surr: Fluorobenzene	0.502		0.5000		100	65	135				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210020-003ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/15/2012** RunNo: **6221**
Client ID: **B21-3-7.5** Batch ID: **3439** Analysis Date: **10/16/2012** SeqNo: **123659**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0711						0	0	30	
Chloromethane	ND	0.0711						0	0	30	
Vinyl chloride	ND	0.00237						0	0	30	
Bromomethane	ND	0.107						0	0	30	
Trichlorofluoromethane (CFC-11)	ND	0.0592						0	0	30	
Chloroethane	ND	0.0711						0	0	30	
1,1-Dichloroethene	ND	0.0592						0	0	30	
Methylene chloride	ND	0.0237						0	0	30	
trans-1,2-Dichloroethene	ND	0.0237						0	0	30	
Methyl tert-butyl ether (MTBE)	ND	0.0592						0	0	30	
1,1-Dichloroethane	ND	0.0237						0	0	30	
2,2-Dichloropropane	ND	0.0592						0	0	30	
cis-1,2-Dichloroethene	ND	0.0237						0	0	30	
Chloroform	ND	0.0237						0	0	30	
1,1,1-Trichloroethane (TCA)	ND	0.0237						0	0	30	
1,1-Dichloropropene	ND	0.0237						0	0	30	
Carbon tetrachloride	ND	0.0237						0	0	30	
1,2-Dichloroethane	ND	0.0355						0	0	30	
Benzene	ND	0.0237						0	0	30	
Trichloroethene (TCE)	ND	0.0355						0	0	30	
1,2-Dichloropropane	ND	0.0237						0	0	30	
Bromodichloromethane	ND	0.0237						0	0	30	
Dibromomethane	ND	0.0474						0	0	30	
cis-1,3-Dichloropropene	ND	0.0237						0	0	30	
Toluene	ND	0.0237						0	0	30	
trans-1,3-Dichloropropene	ND	0.0355						0	0	30	
1,1,2-Trichloroethane	ND	0.0355						0	0	30	
1,3-Dichloropropane	ND	0.0592						0	0	30	
Tetrachloroethene (PCE)	ND	0.0237						0	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210020-003ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/15/2012** RunNo: **6221**
Client ID: **B21-3-7.5** Batch ID: **3439** Analysis Date: **10/16/2012** SeqNo: **123659**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	0.0355						0	0	30	
1,2-Dibromoethane (EDB)	ND	0.00592						0	0	30	
Chlorobenzene	ND	0.0237						0	0	30	
1,1,1,2-Tetrachloroethane	ND	0.0355						0	0	30	
Ethylbenzene	ND	0.0355						0	0	30	
m,p-Xylene	ND	0.0237						0	0	30	
o-Xylene	ND	0.0237						0	0	30	
Styrene	ND	0.0237						0	0	30	
Isopropylbenzene	ND	0.0948						0	0	30	
Bromoform	ND	0.0237						0	0	30	
1,1,2,2-Tetrachloroethane	ND	0.0237						0	0	30	
n-Propylbenzene	ND	0.0237						0	0	30	
Bromobenzene	ND	0.0355						0	0	30	
1,3,5-Trimethylbenzene	ND	0.0237						0	0	30	
2-Chlorotoluene	ND	0.0237						0	0	30	
4-Chlorotoluene	ND	0.0237						0	0	30	
tert-Butylbenzene	ND	0.0237						0	0	30	
1,2,3-Trichloropropane	ND	0.0237						0	0	30	
1,2,4-Trichlorobenzene	ND	0.0592						0	0	30	
sec-Butylbenzene	ND	0.0237						0	0	30	
4-Isopropyltoluene	ND	0.0237						0	0	30	
1,3-Dichlorobenzene	ND	0.0237						0	0	30	
1,4-Dichlorobenzene	ND	0.0237						0	0	30	
n-Butylbenzene	ND	0.0237						0	0	30	
1,2-Dichlorobenzene	ND	0.0237						0	0	30	
1,2-Dibromo-3-chloropropane	ND	0.0355						0	0	30	
1,2,4-Trimethylbenzene	ND	0.0237						0	0	30	
Hexachlorobutadiene	ND	0.118						0	0	30	
Naphthalene	ND	0.0355						0	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210020-003ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/15/2012** RunNo: **6221**
Client ID: **B21-3-7.5** Batch ID: **3439** Analysis Date: **10/16/2012** SeqNo: **123659**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	ND	0.0237						0	0	30	
Surr: 1-Bromo-4-fluorobenzene	0.603		0.5922		102	63.1	141		0		
Surr: Dibromofluoromethane	0.582		0.5922		98.3	67.6	119		0		
Surr: Toluene-d8	0.603		0.5922		102	78.5	126		0		

Sample ID: **1210020-014AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/15/2012** RunNo: **6221**
Client ID: **B21-4-5.0** Batch ID: **3439** Analysis Date: **10/16/2012** SeqNo: **123667**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.283	0.0602	0.5019	0	56.3	43.5	121				
Chloromethane	0.405	0.0602	0.5019	0	80.7	45	130				
Vinyl chloride	0.388	0.00201	0.5019	0	77.4	51.2	146				
Bromomethane	0.414	0.0903	0.5019	0	82.4	70	130				
Trichlorofluoromethane (CFC-11)	0.341	0.0502	0.5019	0	68.0	52.2	132				
Chloroethane	0.463	0.0602	0.5019	0	92.3	43.8	117				
1,1-Dichloroethene	0.401	0.0502	0.5019	0	80.0	61.9	141				
Methylene chloride	0.394	0.0201	0.5019	0	78.5	54.7	142				
trans-1,2-Dichloroethene	0.409	0.0201	0.5019	0	81.4	52	136				
Methyl tert-butyl ether (MTBE)	0.341	0.0502	0.5019	0	68.0	54.4	132				
1,1-Dichloroethane	0.394	0.0201	0.5019	0	78.6	51.8	141				
2,2-Dichloropropane	0.334	0.0502	0.5019	0	66.6	36	123				
cis-1,2-Dichloroethene	0.390	0.0201	0.5019	0	77.7	58.6	136				
Chloroform	0.381	0.0201	0.5019	0	75.9	53.2	129				
1,1,1-Trichloroethane (TCA)	0.388	0.0201	0.5019	0	77.3	58.3	145				
1,1-Dichloropropene	0.389	0.0201	0.5019	0	77.6	55.1	138				
Carbon tetrachloride	0.357	0.0201	0.5019	0	71.1	53.3	144				
1,2-Dichloroethane	0.356	0.0301	0.5019	0	71.0	51.3	139				
Benzene	0.390	0.0201	0.5019	0	77.8	63.5	133				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210020-014AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/15/2012** RunNo: **6221**
Client ID: **B21-4-5.0** Batch ID: **3439** Analysis Date: **10/16/2012** SeqNo: **123667**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	0.388	0.0301	0.5019	0	77.3	68.6	132				
1,2-Dichloropropane	0.391	0.0201	0.5019	0	77.9	59	136				
Bromodichloromethane	0.357	0.0201	0.5019	0	71.2	50.7	141				
Dibromomethane	0.361	0.0401	0.5019	0	71.9	50.6	137				
cis-1,3-Dichloropropene	0.357	0.0201	0.5019	0	71.2	52.3	129				
Toluene	0.388	0.0201	0.5019	0	77.4	67.8	129				
trans-1,3-Dichloropropene	0.341	0.0301	0.5019	0	67.9	52.2	138				
1,1,2-Trichloroethane	0.357	0.0301	0.5019	0	71.2	51.6	137				
1,3-Dichloropropane	0.339	0.0502	0.5019	0	67.6	53.1	134				
Tetrachloroethene (PCE)	0.331	0.0201	0.5019	0	66.0	44.1	141				
Dibromochloromethane	0.356	0.0301	0.5019	0	70.9	55.3	140				
1,2-Dibromoethane (EDB)	0.375	0.00502	0.5019	0	74.7	50.4	136				
Chlorobenzene	0.357	0.0201	0.5019	0	71.2	60	133				
1,1,1,2-Tetrachloroethane	0.357	0.0301	0.5019	0	71.2	53.1	142				
Ethylbenzene	0.371	0.0301	0.5019	0	73.9	54.5	134				
m,p-Xylene	0.715	0.0201	1.004	0	71.2	53.1	132				
o-Xylene	0.366	0.0201	0.5019	0	72.9	53.3	139				
Styrene	0.354	0.0201	0.5019	0	70.6	51.1	132				
Isopropylbenzene	0.360	0.0803	0.5019	0	71.7	58.9	138				
Bromoform	0.312	0.0201	0.5019	0	62.2	57.9	130				
1,1,2,2-Tetrachloroethane	0.325	0.0201	0.5019	0	64.7	51.9	131				
n-Propylbenzene	0.353	0.0201	0.5019	0	70.4	53.6	140				
Bromobenzene	0.340	0.0301	0.5019	0	67.7	54.2	140				
1,3,5-Trimethylbenzene	0.359	0.0201	0.5019	0	71.5	51.8	136				
2-Chlorotoluene	0.359	0.0201	0.5019	0	71.5	51.6	136				
4-Chlorotoluene	0.412	0.0201	0.5019	0	82.0	50.1	139				
tert-Butylbenzene	0.373	0.0201	0.5019	0	74.4	50.5	135				
1,2,3-Trichloropropane	0.312	0.0201	0.5019	0	62.2	50.5	131				
1,2,4-Trichlorobenzene	0.343	0.0502	0.5019	0	68.4	50.8	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210020-014AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/15/2012** RunNo: **6221**
Client ID: **B21-4-5.0** Batch ID: **3439** Analysis Date: **10/16/2012** SeqNo: **123667**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	0.366	0.0201	0.5019	0	73.0	52.6	141				
4-Isopropyltoluene	0.355	0.0201	0.5019	0	70.7	52.9	134				
1,3-Dichlorobenzene	0.325	0.0201	0.5019	0	64.8	52.6	131				
1,4-Dichlorobenzene	0.367	0.0201	0.5019	0	73.2	52.9	129				
n-Butylbenzene	0.352	0.0201	0.5019	0	70.1	52.6	130				
1,2-Dichlorobenzene	0.324	0.0201	0.5019	0	64.6	55.8	129				
1,2-Dibromo-3-chloropropane	0.287	0.0301	0.5019	0	57.1	53	129				
1,2,4-Trimethylbenzene	0.358	0.0201	0.5019	0	71.4	50.6	137				
Hexachlorobutadiene	0.396	0.100	0.5019	0	78.9	51.5	130				
Naphthalene	0.291	0.0301	0.5019	0	57.9	52.3	124				
1,2,3-Trichlorobenzene	0.293	0.0201	0.5019	0	58.3	54.4	124				
Surr: 1-Bromo-4-fluorobenzene	0.504		0.5019		100	63.1	141				
Surr: Dibromofluoromethane	0.493		0.5019		98.2	67.6	119				
Surr: Toluene-d8	0.509		0.5019		101	78.5	126				

Sample ID: **LCS-3439** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/15/2012** RunNo: **6221**
Client ID: **LCSS** Batch ID: **3439** Analysis Date: **10/16/2012** SeqNo: **123683**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.775	0.0600	1.000	0	77.5	37.7	136				
Chloromethane	0.913	0.0600	1.000	0	91.3	38.8	132				
Vinyl chloride	0.932	0.00200	1.000	0	93.2	56.1	130				
Bromomethane	0.990	0.0900	1.000	0	99.0	44.3	149				
Trichlorofluoromethane (CFC-11)	0.904	0.0500	1.000	0	90.4	61.8	130				
Chloroethane	0.968	0.0600	1.000	0	96.8	52.2	131				
1,1-Dichloroethene	0.975	0.0500	1.000	0	97.5	64.6	134				
Methylene chloride	0.990	0.0200	1.000	0	99.0	60.6	140				
trans-1,2-Dichloroethene	0.982	0.0200	1.000	0	98.2	68.7	127				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **LCS-3439** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/15/2012** RunNo: **6221**
Client ID: **LCSS** Batch ID: **3439** Analysis Date: **10/16/2012** SeqNo: **123683**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.984	0.0500	1.000	0	98.4	73.4	128				
1,1-Dichloroethane	0.980	0.0200	1.000	0	98.0	65.5	132				
2,2-Dichloropropane	0.883	0.0500	1.000	0	88.3	28.1	149				
cis-1,2-Dichloroethene	0.978	0.0200	1.000	0	97.8	71.6	123				
Chloroform	1.00	0.0200	1.000	0	100	67.5	129				
1,1,1-Trichloroethane (TCA)	0.968	0.0200	1.000	0	96.8	74.4	130				
1,1-Dichloropropene	0.956	0.0200	1.000	0	95.6	72.7	131				
Carbon tetrachloride	0.944	0.0200	1.000	0	94.4	73	136				
1,2-Dichloroethane	0.967	0.0300	1.000	0	96.7	68.7	133				
Benzene	0.978	0.0200	1.000	0	97.8	74.6	124				
Trichloroethene (TCE)	0.996	0.0300	1.000	0	99.6	71.5	134				
1,2-Dichloropropane	0.913	0.0200	1.000	0	91.3	72.7	133				
Bromodichloromethane	0.910	0.0200	1.000	0	91.0	76.1	136				
Dibromomethane	0.962	0.0400	1.000	0	96.2	70	130				
cis-1,3-Dichloropropene	0.981	0.0200	1.000	0	98.1	59.1	143				
Toluene	0.988	0.0200	1.000	0	98.9	81.1	123				
trans-1,3-Dichloropropene	0.970	0.0300	1.000	0	97.0	49.2	149				
1,1,2-Trichloroethane	0.981	0.0300	1.000	0	98.1	74.5	129				
1,3-Dichloropropane	0.967	0.0500	1.000	0	96.7	70	130				
Tetrachloroethene (PCE)	1.06	0.0200	1.000	0	106	64.4	150				
Dibromochloromethane	0.981	0.0300	1.000	0	98.1	70.6	144				
1,2-Dibromoethane (EDB)	0.973	0.00500	1.000	0	97.3	70	130				
Chlorobenzene	0.962	0.0200	1.000	0	96.2	76.1	123				
1,1,1,2-Tetrachloroethane	0.984	0.0300	1.000	0	98.4	74.8	131				
Ethylbenzene	0.979	0.0300	1.000	0	97.9	74	129				
m,p-Xylene	1.92	0.0200	2.000	0	96.2	79.8	128				
o-Xylene	0.973	0.0200	1.000	0	97.3	77.3	128				
Styrene	0.972	0.0200	1.000	0	97.2	76.8	130				
Isopropylbenzene	0.967	0.0800	1.000	0	96.7	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **LCS-3439** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/15/2012** RunNo: **6221**
Client ID: **LCSS** Batch ID: **3439** Analysis Date: **10/16/2012** SeqNo: **123683**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromoform	0.968	0.0200	1.000	0	96.8	67	154				
1,1,2,2-Tetrachloroethane	0.933	0.0200	1.000	0	93.3	61.9	139				
n-Propylbenzene	0.956	0.0200	1.000	0	95.6	78	130				
Bromobenzene	0.984	0.0300	1.000	0	98.4	49.2	144				
1,3,5-Trimethylbenzene	0.975	0.0200	1.000	0	97.5	79.7	128				
2-Chlorotoluene	0.962	0.0200	1.000	0	96.2	76.7	129				
4-Chlorotoluene	0.978	0.0200	1.000	0	97.8	77.5	125				
tert-Butylbenzene	0.933	0.0200	1.000	0	93.3	74.2	128				
1,2,3-Trichloropropane	0.953	0.0200	1.000	0	95.3	67.9	136				
1,2,4-Trichlorobenzene	0.904	0.0500	1.000	0	90.4	65.6	137				
sec-Butylbenzene	0.964	0.0200	1.000	0	96.4	75.6	133				
4-Isopropyltoluene	0.934	0.0200	1.000	0	93.4	76.8	131				
1,3-Dichlorobenzene	0.980	0.0200	1.000	0	98.0	72.8	128				
1,4-Dichlorobenzene	0.914	0.0200	1.000	0	91.4	72.6	126				
n-Butylbenzene	0.938	0.0200	1.000	0	93.8	65.3	136				
1,2-Dichlorobenzene	0.992	0.0200	1.000	0	99.2	72.8	126				
1,2-Dibromo-3-chloropropane	0.927	0.0300	1.000	0	92.6	64.3	135				
1,2,4-Trimethylbenzene	0.959	0.0200	1.000	0	95.9	77.5	129				
Hexachlorobutadiene	0.960	0.100	1.000	0	96.0	42	151				
Naphthalene	0.945	0.0300	1.000	0	94.5	64	130				
1,2,3-Trichlorobenzene	0.916	0.0200	1.000	0	91.6	62.1	140				
Surr: 1-Bromo-4-fluorobenzene	0.503		0.5000		101	63.1	141				
Surr: Dibromofluoromethane	0.496		0.5000		99.1	67.6	119				
Surr: Toluene-d8	0.507		0.5000		101	78.5	126				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **MB-3439** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/15/2012** RunNo: **6221**
Client ID: **MBLKS** Batch ID: **3439** Analysis Date: **10/16/2012** SeqNo: **123684**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0600									
Chloromethane	ND	0.0600									
Vinyl chloride	ND	0.00200									
Bromomethane	ND	0.0900									
Trichlorofluoromethane (CFC-11)	ND	0.0500									
Chloroethane	ND	0.0600									
1,1-Dichloroethene	ND	0.0500									
Methylene chloride	ND	0.0200									
trans-1,2-Dichloroethene	ND	0.0200									
Methyl tert-butyl ether (MTBE)	ND	0.0500									
1,1-Dichloroethane	ND	0.0200									
2,2-Dichloropropane	ND	0.0500									
cis-1,2-Dichloroethene	ND	0.0200									
Chloroform	ND	0.0200									
1,1,1-Trichloroethane (TCA)	ND	0.0200									
1,1-Dichloropropene	ND	0.0200									
Carbon tetrachloride	ND	0.0200									
1,2-Dichloroethane	ND	0.0300									
Benzene	ND	0.0200									
Trichloroethene (TCE)	ND	0.0300									
1,2-Dichloropropane	ND	0.0200									
Bromodichloromethane	ND	0.0200									
Dibromomethane	ND	0.0400									
cis-1,3-Dichloropropene	ND	0.0200									
Toluene	ND	0.0200									
trans-1,3-Dichloropropene	ND	0.0300									
1,1,2-Trichloroethane	ND	0.0300									
1,3-Dichloropropane	ND	0.0500									
Tetrachloroethene (PCE)	ND	0.0200									

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **MB-3439** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/15/2012** RunNo: **6221**
Client ID: **MBLKS** Batch ID: **3439** Analysis Date: **10/16/2012** SeqNo: **123684**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	0.0300									
1,2-Dibromoethane (EDB)	ND	0.00500									
Chlorobenzene	ND	0.0200									
1,1,1,2-Tetrachloroethane	ND	0.0300									
Ethylbenzene	ND	0.0300									
m,p-Xylene	ND	0.0200									
o-Xylene	ND	0.0200									
Styrene	ND	0.0200									
Isopropylbenzene	ND	0.0800									
Bromoform	ND	0.0200									
1,1,2,2-Tetrachloroethane	ND	0.0200									
n-Propylbenzene	ND	0.0200									
Bromobenzene	ND	0.0300									
1,3,5-Trimethylbenzene	ND	0.0200									
2-Chlorotoluene	ND	0.0200									
4-Chlorotoluene	ND	0.0200									
tert-Butylbenzene	ND	0.0200									
1,2,3-Trichloropropane	ND	0.0200									
1,2,4-Trichlorobenzene	ND	0.0500									
sec-Butylbenzene	ND	0.0200									
4-Isopropyltoluene	ND	0.0200									
1,3-Dichlorobenzene	ND	0.0200									
1,4-Dichlorobenzene	ND	0.0200									
n-Butylbenzene	ND	0.0200									
1,2-Dichlorobenzene	ND	0.0200									
1,2-Dibromo-3-chloropropane	ND	0.0300									
1,2,4-Trimethylbenzene	ND	0.0200									
Hexachlorobutadiene	ND	0.100									
Naphthalene	ND	0.0300									

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **MB-3439** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/15/2012** RunNo: **6221**
Client ID: **MBLKS** Batch ID: **3439** Analysis Date: **10/16/2012** SeqNo: **123684**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	ND	0.0200									
Surr: 1-Bromo-4-fluorobenzene	0.511		0.5000		102	63.1	141				
Surr: Dibromofluoromethane	0.496		0.5000		99.1	67.6	119				
Surr: Toluene-d8	0.508		0.5000		102	78.5	126				

Sample ID: **1210020-146ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6250**
Client ID: **B21-15-5.0** Batch ID: **3452** Analysis Date: **10/17/2012** SeqNo: **124153**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0613						0	0	30	
Chloromethane	ND	0.0613						0	0	30	
Vinyl chloride	ND	0.00204						0	0	30	
Bromomethane	ND	0.0919						0	0	30	
Trichlorofluoromethane (CFC-11)	ND	0.0511						0	0	30	
Chloroethane	ND	0.0613						0	0	30	
1,1-Dichloroethene	ND	0.0511						0	0	30	
Methylene chloride	ND	0.0204						0	0	30	
trans-1,2-Dichloroethene	ND	0.0204						0	0	30	
Methyl tert-butyl ether (MTBE)	ND	0.0511						0	0	30	
1,1-Dichloroethane	ND	0.0204						0	0	30	
2,2-Dichloropropane	ND	0.0511						0	0	30	
cis-1,2-Dichloroethene	ND	0.0204						0	0	30	
Chloroform	ND	0.0204						0	0	30	
1,1,1-Trichloroethane (TCA)	ND	0.0204						0	0	30	
1,1-Dichloropropene	ND	0.0204						0	0	30	
Carbon tetrachloride	ND	0.0204						0	0	30	
1,2-Dichloroethane	ND	0.0306						0	0	30	
Benzene	ND	0.0204						0	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210020-146ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6250**
Client ID: **B21-15-5.0** Batch ID: **3452** Analysis Date: **10/17/2012** SeqNo: **124153**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	ND	0.0306						0	0	30	
1,2-Dichloropropane	ND	0.0204						0	0	30	
Bromodichloromethane	ND	0.0204						0	0	30	
Dibromomethane	ND	0.0409						0	0	30	
cis-1,3-Dichloropropene	ND	0.0204						0	0	30	
Toluene	ND	0.0204						0	0	30	
trans-1,3-Dichloropropene	ND	0.0306						0	0	30	
1,1,2-Trichloroethane	ND	0.0306						0	0	30	
1,3-Dichloropropane	ND	0.0511						0	0	30	
Tetrachloroethene (PCE)	ND	0.0204						0	0	30	
Dibromochloromethane	ND	0.0306						0	0	30	
1,2-Dibromoethane (EDB)	ND	0.00511						0	0	30	
Chlorobenzene	ND	0.0204						0	0	30	
1,1,1,2-Tetrachloroethane	ND	0.0306						0	0	30	
Ethylbenzene	ND	0.0306						0	0	30	
m,p-Xylene	ND	0.0204						0	0	30	
o-Xylene	ND	0.0204						0	0	30	
Styrene	ND	0.0204						0	0	30	
Isopropylbenzene	ND	0.0817						0	0	30	
Bromoform	ND	0.0204						0	0	30	
1,1,2,2-Tetrachloroethane	ND	0.0204						0	0	30	
n-Propylbenzene	ND	0.0204						0	0	30	
Bromobenzene	ND	0.0306						0	0	30	
1,3,5-Trimethylbenzene	ND	0.0204						0	0	30	
2-Chlorotoluene	ND	0.0204						0	0	30	
4-Chlorotoluene	ND	0.0204						0	0	30	
tert-Butylbenzene	ND	0.0204						0	0	30	
1,2,3-Trichloropropane	ND	0.0204						0	0	30	
1,2,4-Trichlorobenzene	ND	0.0511						0	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210020-146ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6250**
Client ID: **B21-15-5.0** Batch ID: **3452** Analysis Date: **10/17/2012** SeqNo: **124153**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	ND	0.0204						0	0	30	
4-Isopropyltoluene	ND	0.0204						0	0	30	
1,3-Dichlorobenzene	ND	0.0204						0	0	30	
1,4-Dichlorobenzene	ND	0.0204						0	0	30	
n-Butylbenzene	ND	0.0204						0	0	30	
1,2-Dichlorobenzene	ND	0.0204						0	0	30	
1,2-Dibromo-3-chloropropane	ND	0.0306						0	0	30	
1,2,4-Trimethylbenzene	ND	0.0204						0	0	30	
Hexachlorobutadiene	ND	0.102						0	0	30	
Naphthalene	ND	0.0306						0	0	30	
1,2,3-Trichlorobenzene	ND	0.0204						0	0	30	
Surr: 1-Bromo-4-fluorobenzene	0.505		0.5108		98.8	63.1	141		0		
Surr: Dibromofluoromethane	0.509		0.5108		99.6	67.6	119		0		
Surr: Toluene-d8	0.515		0.5108		101	78.5	126		0		

Sample ID: **1210020-149AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6250**
Client ID: **B21-15-12.5** Batch ID: **3452** Analysis Date: **10/17/2012** SeqNo: **124155**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.627	0.0728	0.6068	0	103	43.5	121				
Chloromethane	0.791	0.0728	0.6068	0	130	45	130				S
Vinyl chloride	0.708	0.00243	0.6068	0	117	51.2	146				
Bromomethane	0.504	0.109	0.6068	0	83.1	70	130				
Trichlorofluoromethane (CFC-11)	0.556	0.0607	0.6068	0	91.6	52.2	132				
Chloroethane	0.697	0.0728	0.6068	0	115	43.8	117				
1,1-Dichloroethene	0.711	0.0607	0.6068	0	117	61.9	141				
Methylene chloride	0.659	0.0243	0.6068	0	109	54.7	142				
trans-1,2-Dichloroethene	0.713	0.0243	0.6068	0	118	52	136				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210020-149AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6250**
Client ID: **B21-15-12.5** Batch ID: **3452** Analysis Date: **10/17/2012** SeqNo: **124155**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.638	0.0607	0.6068	0	105	54.4	132				
1,1-Dichloroethane	0.730	0.0243	0.6068	0	120	51.8	141				
2,2-Dichloropropane	0.548	0.0607	0.6068	0	90.3	36	123				
cis-1,2-Dichloroethene	0.721	0.0243	0.6068	0	119	58.6	136				
Chloroform	0.695	0.0243	0.6068	0	115	53.2	129				
1,1,1-Trichloroethane (TCA)	0.708	0.0243	0.6068	0	117	58.3	145				
1,1-Dichloropropene	0.714	0.0243	0.6068	0	118	55.1	138				
Carbon tetrachloride	0.639	0.0243	0.6068	0	105	53.3	144				
1,2-Dichloroethane	0.655	0.0364	0.6068	0	108	51.3	139				
Benzene	0.718	0.0243	0.6068	0	118	63.5	133				
Trichloroethene (TCE)	0.744	0.0364	0.6068	0	123	68.6	132				
1,2-Dichloropropane	0.684	0.0243	0.6068	0	113	59	136				
Bromodichloromethane	0.634	0.0243	0.6068	0	104	50.7	141				
Dibromomethane	0.649	0.0485	0.6068	0	107	50.6	137				
cis-1,3-Dichloropropene	0.630	0.0243	0.6068	0	104	52.3	129				
Toluene	0.694	0.0243	0.6068	0	114	67.8	129				
trans-1,3-Dichloropropene	0.628	0.0364	0.6068	0	104	52.2	138				
1,1,2-Trichloroethane	0.634	0.0364	0.6068	0	105	51.6	137				
1,3-Dichloropropane	0.632	0.0607	0.6068	0	104	53.1	134				
Tetrachloroethene (PCE)	0.714	0.0243	0.6068	0	118	44.1	141				
Dibromochloromethane	0.644	0.0364	0.6068	0	106	55.3	140				
1,2-Dibromoethane (EDB)	0.616	0.00607	0.6068	0	102	50.4	136				
Chlorobenzene	0.654	0.0243	0.6068	0	108	60	133				
1,1,1,2-Tetrachloroethane	0.620	0.0364	0.6068	0	102	53.1	142				
Ethylbenzene	0.661	0.0364	0.6068	0	109	54.5	134				
m,p-Xylene	1.32	0.0243	1.214	0	109	53.1	132				
o-Xylene	0.663	0.0243	0.6068	0	109	53.3	139				
Styrene	0.631	0.0243	0.6068	0	104	51.1	132				
Isopropylbenzene	0.651	0.0971	0.6068	0	107	58.9	138				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210020-149AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/16/2012** RunNo: **6250**
Client ID: **B21-15-12.5** Batch ID: **3452** Analysis Date: **10/17/2012** SeqNo: **124155**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromoform	0.569	0.0243	0.6068	0	93.8	57.9	130				
1,1,2,2-Tetrachloroethane	0.513	0.0243	0.6068	0	84.5	51.9	131				
n-Propylbenzene	0.632	0.0243	0.6068	0	104	53.6	140				
Bromobenzene	0.636	0.0364	0.6068	0	105	54.2	140				
1,3,5-Trimethylbenzene	0.620	0.0243	0.6068	0	102	51.8	136				
2-Chlorotoluene	0.615	0.0243	0.6068	0	101	51.6	136				
4-Chlorotoluene	0.612	0.0243	0.6068	0	101	50.1	139				
tert-Butylbenzene	0.616	0.0243	0.6068	0	102	50.5	135				
1,2,3-Trichloropropane	0.579	0.0243	0.6068	0	95.4	50.5	131				
1,2,4-Trichlorobenzene	0.523	0.0607	0.6068	0	86.2	50.8	130				
sec-Butylbenzene	0.629	0.0243	0.6068	0	104	52.6	141				
4-Isopropyltoluene	0.606	0.0243	0.6068	0	99.9	52.9	134				
1,3-Dichlorobenzene	0.610	0.0243	0.6068	0	101	52.6	131				
1,4-Dichlorobenzene	0.599	0.0243	0.6068	0	98.7	52.9	129				
n-Butylbenzene	0.595	0.0243	0.6068	0	98.1	52.6	130				
1,2-Dichlorobenzene	0.587	0.0243	0.6068	0	96.8	55.8	129				
1,2-Dibromo-3-chloropropane	0.589	0.0364	0.6068	0	97.0	53	129				
1,2,4-Trimethylbenzene	0.603	0.0243	0.6068	0	99.4	50.6	137				
Hexachlorobutadiene	0.604	0.121	0.6068	0	99.6	51.5	130				
Naphthalene	0.529	0.0364	0.6068	0	87.2	52.3	124				
1,2,3-Trichlorobenzene	0.544	0.0243	0.6068	0	89.6	54.4	124				
Surr: 1-Bromo-4-fluorobenzene	0.597		0.6068		98.4	63.1	141				
Surr: Dibromofluoromethane	0.608		0.6068		100	67.6	119				
Surr: Toluene-d8	0.612		0.6068		101	78.5	126				

NOTES:
S - Outlying QC recoveries were associated with this sample. The method is in control as indicated by the LCS.

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **MB-3452** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/16/2012** RunNo: **6250**
Client ID: **MBLKS** Batch ID: **3452** Analysis Date: **10/17/2012** SeqNo: **124171**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0600									
Chloromethane	ND	0.0600									
Vinyl chloride	ND	0.00200									
Bromomethane	ND	0.0900									
Trichlorofluoromethane (CFC-11)	ND	0.0500									
Chloroethane	ND	0.0600									
1,1-Dichloroethene	ND	0.0500									
Methylene chloride	ND	0.0200									
trans-1,2-Dichloroethene	ND	0.0200									
Methyl tert-butyl ether (MTBE)	ND	0.0500									
1,1-Dichloroethane	ND	0.0200									
2,2-Dichloropropane	ND	0.0500									
cis-1,2-Dichloroethene	ND	0.0200									
Chloroform	ND	0.0200									
1,1,1-Trichloroethane (TCA)	ND	0.0200									
1,1-Dichloropropene	ND	0.0200									
Carbon tetrachloride	ND	0.0200									
1,2-Dichloroethane	ND	0.0300									
Benzene	ND	0.0200									
Trichloroethene (TCE)	ND	0.0300									
1,2-Dichloropropane	ND	0.0200									
Bromodichloromethane	ND	0.0200									
Dibromomethane	ND	0.0400									
cis-1,3-Dichloropropene	ND	0.0200									
Toluene	ND	0.0200									
trans-1,3-Dichloropropene	ND	0.0300									
1,1,2-Trichloroethane	ND	0.0300									
1,3-Dichloropropane	ND	0.0500									
Tetrachloroethene (PCE)	ND	0.0200									

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **MB-3452** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/16/2012** RunNo: **6250**
Client ID: **MBLKS** Batch ID: **3452** Analysis Date: **10/17/2012** SeqNo: **124171**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	0.0300									
1,2-Dibromoethane (EDB)	ND	0.00500									
Chlorobenzene	ND	0.0200									
1,1,1,2-Tetrachloroethane	ND	0.0300									
Ethylbenzene	ND	0.0300									
m,p-Xylene	ND	0.0200									
o-Xylene	ND	0.0200									
Styrene	ND	0.0200									
Isopropylbenzene	ND	0.0800									
Bromoform	ND	0.0200									
1,1,2,2-Tetrachloroethane	ND	0.0200									
n-Propylbenzene	ND	0.0200									
Bromobenzene	ND	0.0300									
1,3,5-Trimethylbenzene	ND	0.0200									
2-Chlorotoluene	ND	0.0200									
4-Chlorotoluene	ND	0.0200									
tert-Butylbenzene	ND	0.0200									
1,2,3-Trichloropropane	ND	0.0200									
1,2,4-Trichlorobenzene	ND	0.0500									
sec-Butylbenzene	ND	0.0200									
4-Isopropyltoluene	ND	0.0200									
1,3-Dichlorobenzene	ND	0.0200									
1,4-Dichlorobenzene	ND	0.0200									
n-Butylbenzene	ND	0.0200									
1,2-Dichlorobenzene	ND	0.0200									
1,2-Dibromo-3-chloropropane	ND	0.0300									
1,2,4-Trimethylbenzene	ND	0.0200									
Hexachlorobutadiene	ND	0.100									
Naphthalene	ND	0.0300									

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **MB-3452** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/16/2012** RunNo: **6250**
Client ID: **MBLKS** Batch ID: **3452** Analysis Date: **10/17/2012** SeqNo: **124171**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	ND	0.0200									
Surr: 1-Bromo-4-fluorobenzene	0.504		0.5000		101	63.1	141				
Surr: Dibromofluoromethane	0.494		0.5000		98.8	67.6	119				
Surr: Toluene-d8	0.503		0.5000		101	78.5	126				

Sample ID: **LCS-3452** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/16/2012** RunNo: **6250**
Client ID: **LCSS** Batch ID: **3452** Analysis Date: **10/17/2012** SeqNo: **124174**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.906	0.0600	1.000	0	90.6	37.7	136				
Chloromethane	0.988	0.0600	1.000	0	98.8	38.8	132				
Vinyl chloride	0.990	0.00200	1.000	0	99.0	56.1	130				
Bromomethane	1.04	0.0900	1.000	0	104	44.3	149				
Trichlorofluoromethane (CFC-11)	1.01	0.0500	1.000	0	101	61.8	130				
Chloroethane	1.01	0.0600	1.000	0	101	52.2	131				
1,1-Dichloroethene	1.05	0.0500	1.000	0	105	64.6	134				
Methylene chloride	1.01	0.0200	1.000	0	101	60.6	140				
trans-1,2-Dichloroethene	1.03	0.0200	1.000	0	103	68.7	127				
Methyl tert-butyl ether (MTBE)	1.01	0.0500	1.000	0	101	73.4	128				
1,1-Dichloroethane	1.05	0.0200	1.000	0	105	65.5	132				
2,2-Dichloropropane	0.970	0.0500	1.000	0	97.0	28.1	149				
cis-1,2-Dichloroethene	1.04	0.0200	1.000	0	104	71.6	123				
Chloroform	1.04	0.0200	1.000	0	104	67.5	129				
1,1,1-Trichloroethane (TCA)	1.03	0.0200	1.000	0	103	74.4	130				
1,1-Dichloropropene	1.02	0.0200	1.000	0	102	72.7	131				
Carbon tetrachloride	0.994	0.0200	1.000	0	99.4	73	136				
1,2-Dichloroethane	1.02	0.0300	1.000	0	102	68.7	133				
Benzene	1.02	0.0200	1.000	0	102	74.6	124				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **LCS-3452** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/16/2012** RunNo: **6250**
Client ID: **LCSS** Batch ID: **3452** Analysis Date: **10/17/2012** SeqNo: **124174**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	1.07	0.0300	1.000	0	107	71.5	134				
1,2-Dichloropropane	1.03	0.0200	1.000	0	103	72.7	133				
Bromodichloromethane	0.991	0.0200	1.000	0	99.1	76.1	136				
Dibromomethane	1.02	0.0400	1.000	0	102	70	130				
cis-1,3-Dichloropropene	1.01	0.0200	1.000	0	101	59.1	143				
Toluene	1.02	0.0200	1.000	0	102	81.1	123				
trans-1,3-Dichloropropene	1.00	0.0300	1.000	0	100	49.2	149				
1,1,2-Trichloroethane	1.00	0.0300	1.000	0	100	74.5	129				
1,3-Dichloropropane	1.00	0.0500	1.000	0	100	70	130				
Tetrachloroethene (PCE)	1.12	0.0200	1.000	0	112	64.4	150				
Dibromochloromethane	0.992	0.0300	1.000	0	99.2	70.6	144				
1,2-Dibromoethane (EDB)	0.993	0.00500	1.000	0	99.3	70	130				
Chlorobenzene	1.01	0.0200	1.000	0	101	76.1	123				
1,1,1,2-Tetrachloroethane	1.01	0.0300	1.000	0	101	74.8	131				
Ethylbenzene	1.02	0.0300	1.000	0	102	74	129				
m,p-Xylene	2.07	0.0200	2.000	0	103	79.8	128				
o-Xylene	1.02	0.0200	1.000	0	102	77.3	128				
Styrene	1.01	0.0200	1.000	0	101	76.8	130				
Isopropylbenzene	1.02	0.0800	1.000	0	102	70	130				
Bromoform	0.977	0.0200	1.000	0	97.7	67	154				
1,1,2,2-Tetrachloroethane	0.906	0.0200	1.000	0	90.7	61.9	139				
n-Propylbenzene	1.02	0.0200	1.000	0	102	78	130				
Bromobenzene	1.02	0.0300	1.000	0	102	49.2	144				
1,3,5-Trimethylbenzene	1.00	0.0200	1.000	0	100	79.7	128				
2-Chlorotoluene	1.02	0.0200	1.000	0	102	76.7	129				
4-Chlorotoluene	1.01	0.0200	1.000	0	101	77.5	125				
tert-Butylbenzene	0.942	0.0200	1.000	0	94.2	74.2	128				
1,2,3-Trichloropropane	0.988	0.0200	1.000	0	98.8	67.9	136				
1,2,4-Trichlorobenzene	0.969	0.0500	1.000	0	96.9	65.6	137				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **LCS-3452** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/16/2012** RunNo: **6250**
Client ID: **LCSS** Batch ID: **3452** Analysis Date: **10/17/2012** SeqNo: **124174**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	0.976	0.0200	1.000	0	97.6	75.6	133				
4-Isopropyltoluene	0.991	0.0200	1.000	0	99.1	76.8	131				
1,3-Dichlorobenzene	1.01	0.0200	1.000	0	101	72.8	128				
1,4-Dichlorobenzene	1.01	0.0200	1.000	0	101	72.6	126				
n-Butylbenzene	1.01	0.0200	1.000	0	101	65.3	136				
1,2-Dichlorobenzene	1.02	0.0200	1.000	0	102	72.8	126				
1,2-Dibromo-3-chloropropane	0.946	0.0300	1.000	0	94.6	64.3	135				
1,2,4-Trimethylbenzene	1.01	0.0200	1.000	0	101	77.5	129				
Hexachlorobutadiene	0.966	0.100	1.000	0	96.6	42	151				
Naphthalene	0.970	0.0300	1.000	0	97.0	64	130				
1,2,3-Trichlorobenzene	0.972	0.0200	1.000	0	97.2	62.1	140				
Surr: 1-Bromo-4-fluorobenzene	0.507		0.5000		101	63.1	141				
Surr: Dibromofluoromethane	0.491		0.5000		98.1	67.6	119				
Surr: Toluene-d8	0.502		0.5000		100	78.5	126				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Sample Log-In Check List

Client Name: **GEI1**	Work Order Number: **1210020**
Logged by: **Troy Zehr**	Date Received: **10/15/2012**

Chain of Custody

1.	Were custodial seals present?	Yes	☐	No	☐	Not Required	☑
2.	Is Chain of Custody complete?	Yes	☑	No	☐	Not Present	☐
3.	How was the sample delivered?	Client					

Log In

4.	Coolers are present?	Yes	☑	No	☐	NA	☐
5.	Was an attempt made to cool the samples?	Yes	☑	No	☐	NA	☐
6.	Were all coolers received at a temperature of >0° C to 10.0°C	Yes	☑	No	☐	NA	☐
7.	Sample(s) in proper container(s)?	Yes	☑	No	☐		
8.	Sufficient sample volume for indicated test(s)?	Yes	☑	No	☐		
9.	Are samples properly preserved?	Yes	☑	No	☐		
10.	Was preservative added to bottles?	Yes	☐	No	☑	NA	☐
11.	Is there headspace present in VOA vials?	Yes	☐	No	☐	NA	☑
12.	Did all sample containers arrive in good condition?(unbroken)	Yes	☑	No	☐		
13.	Does paperwork match bottle labels?	Yes	☑	No	☐		
14.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No	☐		
15.	Is it clear what analyses were requested?	Yes	☑	No	☐		
16.	Were all holding times able to be met?	Yes	☑	No	☐		

Special Handling (if applicable)

17.	Was client notified of all discrepancies with this order?	Yes	☐	No	☐	NA	☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

18. Additional remarks/Disrepancies

Item Information

Item #	Temp ºC	Condition
Cooler 1	5.1	Good
Cooler 2	6.2	Good
Cooler 3	4.8	Good
Cooler 4	5.2	Good
Cooler 5	6.1	Good

Item #	Temp ºC	Condition
Cooler 6	6.5	Good
Cooler 7	5.4	Good
Cooler 8	5.9	Good
Cooler 9	6.3	Good
Temp Blank 1	5.0	Good
Temp Blank 2	5.4	Good
Temp Blank 3	3.6	Good
Temp Blank 4	4.9	Good
Temp Blank 5	5.4	Good
Temp Blank 6	6.1	Good
Temp Blank 7	5.1	Good

Fremont

Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): 1210020

Date: 10/11/12 Page: 1 of: 3

Client: GEOENGINEERS
Address:
City, State, Zip: SEATTLE, WA Tel:
Reports To (PM): CHRIS BROWN Fax: 425 861-6050 Email: CBROWN@GEOENGINEERS.COM

Project Name: RUFUS W/C 11
Location: SEATTLE, WA
Collected by: SLG
Project No: 20434-001-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	OX/BTEX by EPA 8021b	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOC (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	cPAHs (8260 / 270.B)	Total (T) / Dissolved (D) Anions (NO3*,	Comments/Depths
1 B21-2 2.5'	10/11/12	0805															
2 5.0		0815		X		X	X		X					XT			
3 7.5		0822															
4 10.0		1825															
5 12.5		0835															
6 15.0		0840															
7 17.5		0845															
8 20.0		0854			X			X						XT			
9 25.0		0905															
10 30.0		0912															

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: Return to Client Disposal by Lab (a fee may be assessed if samples are retained after 30 days)

Relinquished	Date/Time	Received	Date/Time
1	10/11/12 1350		10/11/12 1400
2			
3			

Special Remarks:

TAT --> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

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Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (Internal): _____

Date: 10/11/12 Page: 2 of: 3

Client: GEOENGINEERS
Address:
City, State, Zip: SEATTLE, WA Tel:
Reports To (PM): CHRIS BROWN Fax: 425 861-6050 Email: CBROWN@GEOENGINEERS.COM

Project Name: RUFUS w/oil
Location: SEATTLE, WA
Collected by: LL
Project No: 20454-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021b	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOC (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	OP Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)**	Comments/Depth
1	B21-2 35.0'	10/11/12	0920																
2	40.0		0924																
3	45.0	NO SAMPLE																	
4	50.0		1009																
5	55.0		1020																
6	60.0		1032																
7	65.0	NO SAMPLE																	
8	70.0		1058																
9	75.0		1145																
10	80.0		1152																

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
[signature]	10/11/12 1330	[signature]	10/11/12 1400
Relinquished	Date/Time	Received	Date/Time

TAT --> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

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Chain of Custody Record

1411 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): _____

Date: 10/11/12

Page: 3 of: 3

Client: GEO ENGINEERS
Address: _____
City, State, Zip: SEATTLE, WA Tel: _____
Reports To (PM): CHRIS BROWN Fax: 425-861-6050 Email: CBROWN@GEOENGINEERS

Project Name: RUFUS M/O 11
Location: SEATTLE, WA
Collected by: SLG
Project No: 21881-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021b	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	Semi VOA (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) | Dissolved (D)	Anions (Cl)**	Comments/Depth
1	B 21-2 85.0	10/11/12	1215																
2	90.0		1223																
3	95.0		1230																
4	100.0		1245																
5																			
6																			
7																			
8																			
9																			
10																			

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate-Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained longer than 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
1	10/11/12 1330	2	10/11/12 1400
Relinquished	Date/Time	Received	Date/Time
3		4	

TAT -> Next Day 2 Day 3 Day STD

Distribution: White - Lab; Yellow - File; Pink - Originator

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Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): 1210020

Date: 10/8/12

Page: 1 of: 3

Client: GEOENGINEERS
Address:
City, State, Zip: SEATTLE, WA Tel: 206.427.7706
Reports To (PM): CHRIS BROWN Fax: 425-861-6050 email: CBROWN@GEOENGINEERS.

Project Name: RUFUS 2.0 W/O 11
Location: SEATTLE, WA
Collected by: SLG

Project No: 20434-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021b	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SIM HOC (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) | Dissolved (D)	Anions (C)**	Comments/Depth
1	MW21-2-2.5'	10/8/12	0820	S															
2	5.0'		0825																
3	7.5		0831		X			X		X		X				X	T		
4	10.0		0841																
5	12.5		0855																
6	15.0	NO SAMPLE																	
7	17.5		0914																
8	20.0		0923			X				X						X	T		
9	22.5		0931																
10	25.0		0940																

*Metals Analysis (Circle): NYCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
× [signature]	10/8/12 1625	× [signature]	10/8/12 17:09
×	Date/Time	×	Date/Time

TAT --> Next Day 2 Day 3 Day (STD)

Distribution: White - Lab, Yellow - File, Pink - Originator

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Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): _____

Date: 10/8/12

Page: 2 of: 3

Client: GEOENGINEERS
Address:
City, State, Zip: SEATTLE, WA Tel: 206-427-7700
Reports To (PM): CHRIS BROWN Fax: 425-861-6050 Email: CBROWN@GEOENGINEERS.COM

Project Name: PUGET 2.0 W/O 11
Location: SEATTLE, WA
Collected by: SLH
Project No: 20434-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021b	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOC (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)**			Comments/Depth
1	MW 21-2 - 27.5	10/8/12	0945	S																	
2	30.0		0951																		
3	35.0		0957																		
4	40.0		1004																		
5	45.0		1012																		
6	50.0		1020																		
7	55.0		1033																		
8	60.0		1045																		
9	65.0		1057																		
10	70.0		1106																		

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Si Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x [signature]	10/8/12 1625	x [signature]	10/8/12 17:09
Relinquished	Date/Time	Received	Date/Time
x		x	

TAT --> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

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Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): _____

Date: 10/8/12

Page: 3 of: 3

Client: GEOENGINEERS
Address:
City, State, Zip: SEATTLE, WA Tel: 206-427-7706
Reports To (PM): CHRIS BROWN Fax: 425 861 6050 Email: CBROWN@GEOENGINEERS.COM

Project Name: RUFUS 20 w/o 1
Location: SEATTLE, WA
Collected by: ZLG
Project No: 20434-001-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021B	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (NCID)	Diesel/Heavy Oil Range Organics	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T)	Dissolved (D)	Anions (IC)**	Comments/Depth
1 MW 21-2 - 75.0	10/8/12	NO	SAMPLE																
2 80.0		1130	S																
3 85.0		1144																	
4 90.0		1200																	
5 95.0		1206																	
6 100.0		1237																	
7 105.0		1255																	
8 110.0	↓	1320	↓																
9																			
10																			

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
X [signature]	10/8/12 1625	[signature]	10/8/12 17:09
Relinquished	Date/Time	Received	Date/Time
X		X	

TAT --> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

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Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (if known): 1210020

Date: 10/10/12

Page: 1 of: 3

Client: GEOENGINEERS
Address:
City, State, Zip: SEATTLE, WA Tel: 206 284 7225
Reports To (PM): CHRIS BROWN Fax: 425 861 6056 Email: CBROWN@GEOENGINEERS.COM

Project Name: RUFUS W/O 11
Location: SEATTLE, WA
Collected by: SLL
Project No: 20434-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by 8021B	PHX by 8260	Gasoline Range Organics	Hydrocarbon Identification (NCID)	Diesel/Heavy Oil Range Organics	SEMI VOC (EPA 8270 SIM)	PAH (EPA 8270 SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6010 / 7000's)	Total (T) / Dissolved (D)	Anions (IC)**	Comments/Depth
1	MW 21-1 2.5	10/10/12	0819	S															
2	5.0		0825		X			X	X	X						X	T		
3	7.5		0831																
4	10.0		0835																
5	12.5		0842																
6	15.0		0850																
7	17.5		0855			X				X						X	T		
8	20.0		0914																
9	25.0		0925																
10	30.0	↓	0926	↓															

*Metals Analysis (Circle): MTCA-5 (RCRA-8) Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

** Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab (A fee may be assessed if samples are retained after 30 days)

Special Remarks

Relinquished	Date/Time	Received	Date/Time
x [signature]	10/10/12 1305	x [signature]	10/10/12 13 05"
Relinquished	Date/Time	Received	Date/Time
x		x	

TAT — Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

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Fremont

Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): _____

Date: 10/10/12

Page: 2 of 3

Client: GEOENGINEERS
Address: _____
City, State, Zip: SEATTLE, WA Tel: 206.284.7123
Reports To (PM): CRIS BROWN Fax: 425-861-6050 Email: CBROWN@GEOENGINEERS.COM

Project Name: RUFUS W/C II
Location: SEATTLE, WA
Collected by: BLG
Project No: 2042-001-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021B	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SGME WOI (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) / Dissolved (D)	Anions** (IC)**	Comments/Depth
1 MW 21-1 35.0	10/10	0936																
2 40.0		4																
3 45.0	NO	SAMPLE	0953															
4 50.0		1010																
5 55.0		1015																
6 60.0		1030																
7 65.0	NO	SAMPLE																
8 70.0		1053	4															
9 75.0		1059																
10 80.0		1114																

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (after ___ months unless otherwise specified)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
1	10/10/12 1345	1	10/10/12 13:45
Relinquished	Date/Time	Received	Date/Time
2		2	

TAT --> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

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Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (Internal): _____

Date: 10/10/12 Page: 3 of: 3

Client: GEOENGINEERS
Address:
City, State, Zip: SEATTLE WA Tel: 206 284 1123
Reports To (PM): CHRIS BRAUN Fax: 425 861 6050 Email: CBRAUN@GEOENGINEERS.COM

Project Name: RUFUS W/O 11
Location: SEATTLE, WA
Collected by: SLG
Project No: 20454-001-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	Gx/BTEX by LUFT NWTPH	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Chlorobenzenes (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)**	Comments/Depth
1 MW 21-1	95.0	10/10/12	1133															
2	90.0	NEO	SAME LE															
3	95.0		1200															
4																		
5																		
6																		
7																		
8																		
9																		
10																		

*Metals Analysis (Circle): MTCA 5 RCRA-8 Priority Pollutants TAL Individual Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
[signature]	10/10/12 1305	[signature]	10/10/12 13:05
Relinquished	Date/Time	Received	Date/Time

TAT --> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

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Chain of Custody Record

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Laboratory Project No (internal): _____

Date: 10/3/12

Page: 1 of: 3

Client: GEOENGINEERS
Address:
City, State, Zip: SEATTLE, WA Tel: 206-427-7223
Reports To (PM): CHRIS BROWN Fax: 425-861-6050 Email:

Project Name: RUFUS W/O 11
Location: SEATTLE
Collected by: SLL

Project No: 20424-00.-11

Sample Name		Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX-OHC by EPA 8021B	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (NEAT)	Diesel/Heavy Oil Range Organics	SVOC (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151)	Metals * (6020 / 200.8)	Total (T) / Dissolved (D) Arsenic (As)**				Comments/Depth
1	MW21-3 2.5	10/3/12	0811	S	X			X	X	X						XT					Hold CB
2	5.0		0819																		
3	7.5		0828																		
4	10.0		0845																		
5	12.5		0840																		
6	15.0		0848																		
7	17.5		0855																		
8	20.0		0902																		
9	22.5	MS SAMPLE																			
10	25.0	↓	0918	↓	X				X							XT					

* Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
[signature]	10/5/12 1000	[signature]	10/9/12 1637
[signature]	10/9/12 1637	[signature]	10/9/12 1637

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Laboratory Project No (internal): _____

Date: 10/4/12 Page: 2 of 3

Client: GEO ENGINEERS
Address:
City, State, Zip: SEATTLE, WA Tel: 206-421-7233
Reports To (PM): CHRIS BROWN Fax: 425-861-6050 Email: CBROWN@GEOENG.COM

Project Name: RUFFNER W/ 011
Location: SEATTLE, WA
Collected by: GLG
Project No: 20434-001-11

	Sample Name		Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	cPAH (EPA 8270 by SIM)	PAH (EPA 8270 by SIM)	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMIVOC (EPA 8270)	PAH (EPA 8270 - SIM)	PCB's (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 7470)	Total (T)	Dissolved (D)	Anions (IC)**	Comments/Depth
1	MW 21-3	30.0'	10/3/12	0931	S																HOLD
2		35.0		0942																	
3		40.0	NO SAMPLE																		
4		45.0		1025																	
5		50.0		1040																	
6		55.0		1101																	
7		60.0		1133																	
8		65.0		1144																	
9		70.0		1201																	
10		75.0		1217																	

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Si Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (a fee may be assessed if samples are retained after 30 days)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
1	10/4/12 1600		10/4/12 1637
2	10/4/12 1637		10/4/12 1657

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Laboratory Project No (Internal): _____

Date: 10/9/12 Page: 3 of: 3

Client: GEOENGINEERS Project Name: RUFUS W/O 11

Address: _____ Location: SEATTLE, WA

City, State, Zip: SEATTLE, WA Tel: 206-427-7223 Collected by: SLG

Reports To (PM): CHRIS BROWN Fax: 425-861-6050 Email: CBROWN@GEOENGINEERS.COM Project No: 20434-001-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by Ext. 8021D	PAH by 8270	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SGMS-SIM cPAH (EPA 8270)	PAH (EPA 8270 - SIM)	PCB's (EPA 8082)	Pesticides (EPA 8081)	Chlorinated Acids (EPA 8151A)	Metals* (6020A / 200.8)	Total Hg (Dissolved (D))	Anions (IC)**	Comments/Depth
1 MW-21-3 80.0	10/9/12	1250																HOLD
2 85.0	NO SAMPLE																	
3 90.0		1250																
4 95.0		1305																
5 100.0		1320																
6																		
7																		
8																		
9																		
10																		

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Sc Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
1	10/9/12 1600		10/9/12 1637
2	10/9/12 1637		10/9/12 1657

TAT --> Next Day 2 Day 3 Day STD

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Laboratory Project No (internal): _____

Date: 10/5/12

Page: 1 of: 3

Client: Geoengineers
Address: _____
City, State, Zip: Seattle, WA
Tel: 206 427-7706

Project Name: Rufus 2.0 Well
Location: Seattle, WA
Collected by: Claudia De La Vida

Reports To (PM): Chris Brown
Fax: 425 861 6050
Email: cbrown@geoengineers.com
Project No: 20434-001-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021b	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOC (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)**	Comments/Depth
1 B21-3-2.5	10/5	0837	S															HOLD
2 3-5.0		0930																
3 3-7.5		0933		X		X	X		X					X	T			
4 B21-4-2.5		0940																
5 4-5.0		0942		X		X	X		X					X	T			
6 4-7.5		0950																
7 B21-5-2.5		1005																
8 -5.0		1010																
9 -7.5		1025		X		X	X		X					X	T			
10 B21-6-2.5		1130																

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x	10/5/12 1608	x	10/5/12 16:08
Relinquished	Date/Time	Received	Date/Time
x		x	

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Laboratory Project #a (internal): _____

Date: 10/5/12 Page: 2 of: 3

Client: GeoEngineers
Address:
City, State, Zip: Seattle, WA Tel: 206 4277706

Project Name: Rufus 2.0 (W011
Location: Seattle, WA
Collected by: Claudia De La Vina

Reports To (PM): Chris Brown Fax: Email: cbrown@geoengineers Project No: 20434-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	Gx/BTEX by EPA 8021b	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T)	Dissolved (D)	Anions (IC)**	Comments/Depth
1	B21-6-5.0	10/5	1133	S																HOLD
2	-7.5		1145		X			X		X	X					X	T			
3	-10.0		1150																	
4	-12.5		1155			X				X						X	T			
5	B21-7-2.5		1216																	
6	-5.0		1220		X			X		X	X					X	T			
7	-7.5		1223																	
8	-10.0		1235																	
9	-12.0		1240			X				X						X	T			
10	B21-8-2.5		1320																	

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x	10/5/12 1608	x	10/5/12 16:08
Relinquished	Date/Time	Received	Date/Time
x		x	

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Laboratory Project No (internal): _____

Date: 10/5/12

Page: 3 of: 3

Client: GeoEngineers
Address:
City, State, Zip
Tel: 2064277706

Project Name: Ruby 2.0 CWDII
Location: Seattle, WA
Collected by: Claudia De La Vina

Reports To (PM): Chris Brown
Fax:
Email: cbrown@geoengineers.com
Project No: 20434-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021B	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020A / 200.8)	Total (T) / Dissolved (D)	Anions (IC)**	Comments/Depth
1	B21-8-5.0	10/5	1324	S	X			X		X		X				X	T			HOLD
2	↓ -7.0		1330	↓																↓
3	B21-9-2.5		1415					X		X		X				X	T			
4	-5.0		1420																	
5	-7.5		1430																	
6	-10.0		1435			X				X						X	T			
7	↓ -12.0	↓	1438	↓																↓
8																				
9																				
10																				

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x	10/5/12 1608	x	10/5/12 16:08
x		x	

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Laboratory Project No (Internal): 1210020
Date: 10/4/12
Page: 1 of: 3

Client: GeoEngineers
Address:
City, State, Zip: Seattle, WA Tel: 206 427 7756
Reports To (PM): Chris Brown Fax: 425 861 6050 Email: cbrown@geoengineers.

Project Name: Rubis 2.0 2011
Location: Seattle, WA
Collected by: Steve Goldo / Claudia DeLaVia
Project No: 20434-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021B	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 7000)	Total (T) / Dissolved (D)	Anions (IC)**	Comments/Depth
1	B21-1-2.5	10/4	0832	S															HOLD
2	-5.0		0837																
3	-7.5		0843		X		X	X		X				X		T			
4	-10.0		0846																
5	-12.5		0850																
6	-15.0		0855																
7	-17.5		0900																
8	-20.0		0905																
9	-22.5		0910																
10	-25.0		0911		X			X						X		T			

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x	10/4/12 1620	x	10/4/12 16:20
Relinquished	Date/Time	Received	Date/Time
x		x	

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Laboratory Project No (internal): 120020
Date: 10/4/12
Page: 2 of: 3

Client: GeoEngineers
Address:
City, State, Zip: Seattle, WA Tel: 2064277706
Reports To (PM): Chris Brown Fax: Email:

Project Name: Rubles 2.0 WDII
Location:
Collected by: Steve Godes / Claudia De La Vina
Project No: 20434-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021b	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* 16020 / 200.8	Total (T) | Dissolved (D)	Anions (IC)**	Comments/Depth
1	B21-1-30.0	10/4	0931	S															HOLD
2	-35.0		0938																
3	-40.0		0950																
4	-45.0		1000																
5	-50.0		1012																
6	-55.0		1024																
7	-60.0		1035																
8	-65.0		1045																
9	-70.0		1100																
10	-75.0		1117																

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x	10/4/12 1620	x	10/4/12 16:20
Relinquished	Date/Time	Received	Date/Time
x		x	

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Laboratory Project No (internal): 1210020
Date: 10/4/12
Page: 3 of: 3

Client: GeoEngineers
Address:
City, State, Zip: Seattle, WA Tel: 206 427 7706
Reports To (PM): Chris Brown Fax: Email:

Project Name: Rubus 2.0 #011
Location:
Collected by: Steve Gerkes / Claudia De La Vega
Project No: 20434-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GRO/BTEX by EPA 8021b	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SemiVOC (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T)	Dissolved (D)	Anions (IC)**	Comments/Depth
1	B21-1-80.0	10/4	1135	S																HOLD
2	-85.0		1152																	
3	-90.0		1210																	
4	-95.0		1230																	
5	-100.0		1235																	
6	-27.5		0917																	
7																				
8																				
9																				
10																				

*Metals Analysis (Circle): MTCA5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x	10/4/12 1620	x	10/4/12 16:20
Relinquished	Date/Time	Received	Date/Time
x		x	

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Laboratory Project No: (internal): 1210020

Date: 10/8/12

Page: 1 of: 6

Client: GeoEngineers
Address:
City, State, Zip: Seattle, WA
Tel: 206 427 7706
Reports To (PM): Chris Brown
Fax: 425 861 6050
Email: cbrown@geoengineers.

Project Name: Rufus 2.0 NOII
Location: Seattle, WA
Collected by: Claudia De La Via
Project No: 20431-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021b	BTEX by EPA 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)**	Comments/Depth
1	B21-10-2.5	10/8	0855	S	X			X		X		X			X	T			HOLD
2	-5.0		0858																
3	-7.5		0900																
4	-10.0		0905																
5	-12.5		0910																
6	-15.0		0915																
7	-17.5		0920		X			X		X					X				
8	-20.0		0924																
9	B21-11-2.5		0950		X			X		X		X			X	T			
10	-5.0		0953																

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zr

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x [signature]	10/8/12 1709	x [signature]	10/8/12 17:03
x		x	

TAT --> Next Day 2 Day 3 Day STD

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Laboratory Project No (internal): _____

Date: 10/8/12 Page: 2 of: 6

Client: GeoEngineers Project Name: Rufus 2.0 WO 11
Address: _____ Location: _____
City, State, Zip _____ Tel: 2064277706 Collected by: Claudia De La Via
Reports To (PM): Chris Brown Fax: Email: Project No: 20434-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021B	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOL (EPA 8270) - SIM	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)**	Comments/Depth
1	B21-11-7.5	10/8	0955	S			X		X		X					XT				HOLD
2	-10.0		1000		X			X		X										
3	-12.5		1002																	
4	-15.0		1005																	
5	-17.5		1010																	
6	-20.0		1015																	
7	B21-12-2.5		1035																	
8	-5.0		1040		X			X		X						XT				4 VOAS + 2 JARS
9	-7.5		1045																	
10	-10.0		1050																	4 VOAS + 2 JARS

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☒ Disposal By Lab (Fees may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x	10/8/12 1709	x	10/8/12 17:09
Relinquished	Date/Time	Received	Date/Time
x		x	

TAT → Next Day 2 Day 3 Day (STD)

Distribution: White - Lab, Yellow - File, Pink - Originator

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Laboratory Project No (internal): _____

Date: 10/18/12 Page: 3 of: 6

Client: GeoEngineers
Address:
City, State, Zip: Seattle, WA Tel: 206 4277706
Reports To (PM): Chris Brown Fax: Email:

Project Name: Rufus 2.0 (30 11
Location:
Collected by: Claudia De La Via
Project No: 20434-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021b	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (NCID)	Diesel/Heavy Oil Range Organics	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)**	Comments/Depth
1	B21-12-12.5	10/8	1100	S															HOLD
2	-15.0		1105																4 VOAs + 2 JARS
3	-17.5		1110		X		X	X	X						X	T			
4	-20.0		1115																4 VOAs + 2 JARS
5	B21-13-2.5		1205		X		X	X	X						X	T			
6	-5.0		1208																
7	-7.5		1210																
8	-10.0		1212																
9	-12.5		1215																
10	-15.0	↓	1218	↓		X			X						X	T			↓

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sr Ti Tl U V Zn

** Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x	10/8/12 1709	x	10/8/12 17:09
Relinquished	Date/Time	Received	Date/Time
x		x	

TAT --> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

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Fremont Analytical

Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): _____

Date: 10/8/12

Page: 4 of 6

Client: GeoEngineers
Address: _____
City, State, Zip: Seattle, WA Tel: 206 427-7706
Reports To (PM): Chris Brown Fax: Email: chrisb@geoengineers.com

Project Name: _____
Location: _____
Collected by: _____
Project No: 20432-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021b	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (NCID)	Diesel/Heavy Oil Range Organics	SCAN VOC (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Pesticides (EPA 8081)	Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)**	Comments/Depth
1	B21-13-17.5	10/8	1220	S															HOLD
2	-20.0		1225																
3	B21-14-2.5		1325		X		X	X		X					X	T			
4	-5.0		1330																
5	-7.5		1333																
6	-10.0		1335																
7	-12.5		1340		X			X							X	T			
8	-15.0		1345																
9	-17.5		1347																
10	-20.0		1350																

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x	10/8/12 1709	x	10/8/12 17:09
Relinquished	Date/Time	Received	Date/Time
x		x	

TAT--> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

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Fremont

Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (Internal): _____

Date: 10/8/12 Page: 5 of: 6

Client: GeoEngineers Project Name: Ruby 2.0 WO 11
Address: _____ Location: _____
City, State, Zip _____ Tel: 206 476 7706 Collected by: Claudia De La Via
Reports To (PM): Chris Brown Fax: Email: Project No: 20434-001-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	cPAH by EPA 8041b	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOA (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)**	Comments/Depth
1 B21-15-2.5	10/8	1425	S															H02.D
2 -5.0		1430		X			X		X		X				X	T		
3 -7.5		1433																
4 -10.0		1435																
5 -12.5		1440			X				X						X	T		
6 -15.0		1442																
7 -17.5		1443																
8 -19.0		1445																
9 B21-16-2.5		1515		X			X		X		X				X	T		
10 B21-16-5.0		1517																

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x [signature]	10/8/12 1709	x [signature]	10/8/12 17:09
x		x	

TAT --> Next Day 2 Day 3 Day (STD)

Distribution: White - Lab, Yellow - File, Pink - Originator

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Fremont ANALYTICAL

Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): _____

Date: 10/8/12 Page: 6 of: 6

Client: GeoEngineers
Address:
City, State, Zip
Tel: 2064767706
Project Name: Rufus 2.0 WO 11
Location:
Collected by: Claudia DeLaVar

Reports To (PM): Chris Brown
Fax:
Email: cbrown@geoengineers.com
Project No: 20434-001-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	GX/BTEX by EPA 8021B	BTEX by 8260	Gasoline Range Organics	Hydrocarbon Identification (NCID)	Diesel/Heavy Oil Range Organics	SemiVOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	O Pesticides (EPA 8081)	O Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)**	Comments/Depth
1 B21-16-7.5	10/8	1520	S															HOLD
2 -10.0		1525		X		X	X								X	T		
3 -12.5		1527																
4 -15.0		1530																
5 -17.5		1535																
6 -20.0		1545																
7																		
8																		
9																		
10																		

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
x [signature]	10/8/12 1704	x [signature]	10/8/12 17:09
Relinquished	Date/Time	Received	Date/Time
x		x	

TAT --> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

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1311 N. 35th St.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

GeoEngineers, Inc. - Redmond
Chris Brown
8410 154th Ave. NE
Redmond, Washington 98052

RE: Rufus
Lab ID: 1210121

October 24, 2012

Attention Chris Brown:

Fremont Analytical, Inc. received 3 sample(s) on 10/15/2012 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Dissolved Mercury by EPA Method 245.1
Dissolved Metals by EPA Method 200.8
Gasoline by NWTPH-Gx
Volatile Organic Compounds by EPA Method 8260

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Michael Dee
Sr. Chemist / Principal

Date: *10/24/2012*

CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus
Lab Order: 1210121

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1210121-001	MW-21-1	10/15/2012 12:36 PM	10/15/2012 2:05 PM
1210121-002	MW-21-2	10/15/2012 10:10 AM	10/15/2012 2:05 PM
1210121-003	MW-21-3	10/15/2012 11:26 AM	10/15/2012 2:05 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **1210121**
Date: **10/24/2012**

CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

I. SAMPLE RECEIPT:
All samples were received intact. The internal ice chest temperatures were measured on receipt and are recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Analytical Report

WO#: **1210121**

Date Reported: **10/24/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/15/2012 12:36:00 P

Project: Rufus

Lab ID: 1210121-001 **Matrix:** Water

Client Sample ID: MW-21-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3453		Analyst: BR
Diesel (Fuel Oil)	ND	50.0		µg/L	1	10/17/2012 3:02:00 PM
Heavy Oil	ND	100		µg/L	1	10/17/2012 3:02:00 PM
Surr: 2-Fluorobiphenyl	105	50-150		%REC	1	10/17/2012 3:02:00 PM
Surr: o-Terphenyl	105	50-150		%REC	1	10/17/2012 3:02:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6253		Analyst: EM
Gasoline	ND	50.0		µg/L	1	10/18/2012 4:49:00 AM
Surr: 1,2-Dichloroethane-d4	121	65-135		%REC	1	10/18/2012 4:49:00 AM
Surr: Fluorobenzene	103	65-135		%REC	1	10/18/2012 4:49:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: R6252		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Chloromethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Vinyl chloride	ND	0.200		µg/L	1	10/18/2012 4:49:00 AM
Bromomethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Trichlorofluoromethane (CFC-11)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Chloroethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Methylene chloride	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Methyl tert-butyl ether (MTBE)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1-Dichloroethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
2,2-Dichloropropane	ND	2.00		µg/L	1	10/18/2012 4:49:00 AM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Chloroform	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1,1-Trichloroethane (TCA)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Carbon tetrachloride	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2-Dichloroethane (EDC)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Benzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Trichloroethene (TCE)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2-Dichloropropane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Bromodichloromethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM

Qualifiers:

- B Analyte detected in the associated Method Blank
- D Dilution was required
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not detected at the Reporting Limit
- RL Reporting Limit
- S Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210121**

Date Reported: **10/24/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/15/2012 12:36:00 P

Project: Rufus

Lab ID: 1210121-001 **Matrix:** Water

Client Sample ID: MW-21-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: R6252		Analyst: EM
Dibromomethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
cis-1,3-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Toluene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
trans-1,3-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1,2-Trichloroethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,3-Dichloropropane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Dibromochloromethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2-Dibromoethane (EDB)	ND	0.0100		µg/L	1	10/18/2012 4:49:00 AM
Chlorobenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1,1,2-Tetrachloroethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Ethylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
m,p-Xylene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
o-Xylene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Styrene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Isopropylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Bromoform	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1,2,2-Tetrachloroethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
n-Propylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Bromobenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,3,5-Trimethylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
2-Chlorotoluene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
4-Chlorotoluene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
tert-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2,3-Trichloropropane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2,4-Trichlorobenzene	ND	2.00		µg/L	1	10/18/2012 4:49:00 AM
sec-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
4-Isopropyltoluene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,3-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,4-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
n-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2-Dibromo-3-chloropropane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2,4-Trimethylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Hexachlorobutadiene	ND	4.00		µg/L	1	10/18/2012 4:49:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210121**

Date Reported: **10/24/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/15/2012 12:36:00 P

Project: Rufus

Lab ID: 1210121-001 **Matrix:** Water

Client Sample ID: MW-21-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: R6252		Analyst: EM
Naphthalene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2,3-Trichlorobenzene	ND	4.00		µg/L	1	10/18/2012 4:49:00 AM
Surr: 1-Bromo-4-fluorobenzene	90.1	79.2-120		%REC	1	10/18/2012 4:49:00 AM
Surr: Dibromofluoromethane	112	76-114		%REC	1	10/18/2012 4:49:00 AM
Surr: Toluene-d8	96.4	86.8-119		%REC	1	10/18/2012 4:49:00 AM
Dissolved Metals by EPA Method 200.8				Batch ID: 3487		Analyst: SG
Arsenic	ND	1.00		µg/L	1	10/19/2012 8:42:34 PM
Barium	28.3	0.500		µg/L	1	10/23/2012 1:31:27 PM
Cadmium	ND	0.200		µg/L	1	10/19/2012 8:42:34 PM
Chromium	ND	0.500		µg/L	1	10/19/2012 8:42:34 PM
Lead	ND	1.00		µg/L	1	10/19/2012 8:42:34 PM
Selenium	1.30	1.00		µg/L	1	10/19/2012 8:42:34 PM
Silver	0.444	0.200		µg/L	1	10/19/2012 8:42:34 PM
Dissolved Mercury by EPA Method 245.1				Batch ID: 3474		Analyst: MC
Mercury	ND	0.100		µg/L	1	10/19/2012 3:12:41 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210121**

Date Reported: **10/24/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/15/2012 10:10:00 A

Project: Rufus

Lab ID: 1210121-002 **Matrix:** Water

Client Sample ID: MW-21-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3453		Analyst: BR
Diesel (Fuel Oil)	ND	50.0		µg/L	1	10/17/2012 3:29:00 PM
Heavy Oil	ND	100		µg/L	1	10/17/2012 3:29:00 PM
Surr: 2-Fluorobiphenyl	106	50-150		%REC	1	10/17/2012 3:29:00 PM
Surr: o-Terphenyl	109	50-150		%REC	1	10/17/2012 3:29:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6253		Analyst: EM
Gasoline	ND	50.0		µg/L	1	10/18/2012 5:16:00 AM
Surr: 1,2-Dichloroethane-d4	121	65-135		%REC	1	10/18/2012 5:16:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/18/2012 5:16:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: R6252		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Chloromethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Vinyl chloride	ND	0.200		µg/L	1	10/18/2012 5:16:00 AM
Bromomethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Trichlorofluoromethane (CFC-11)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Chloroethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Methylene chloride	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Methyl tert-butyl ether (MTBE)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1-Dichloroethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
2,2-Dichloropropane	ND	2.00		µg/L	1	10/18/2012 5:16:00 AM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Chloroform	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1,1-Trichloroethane (TCA)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Carbon tetrachloride	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2-Dichloroethane (EDC)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Benzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Trichloroethene (TCE)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2-Dichloropropane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Bromodichloromethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210121**

Date Reported: **10/24/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/15/2012 10:10:00 A

Project: Rufus

Lab ID: 1210121-002 **Matrix:** Water

Client Sample ID: MW-21-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: R6252		Analyst: EM
Dibromomethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
cis-1,3-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Toluene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
trans-1,3-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1,2-Trichloroethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,3-Dichloropropane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Dibromochloromethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2-Dibromoethane (EDB)	ND	0.0100		µg/L	1	10/18/2012 5:16:00 AM
Chlorobenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1,1,2-Tetrachloroethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Ethylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
m,p-Xylene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
o-Xylene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Styrene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Isopropylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Bromoform	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1,2,2-Tetrachloroethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
n-Propylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Bromobenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,3,5-Trimethylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
2-Chlorotoluene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
4-Chlorotoluene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
tert-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2,3-Trichloropropane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2,4-Trichlorobenzene	ND	2.00		µg/L	1	10/18/2012 5:16:00 AM
sec-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
4-Isopropyltoluene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,3-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,4-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
n-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2-Dibromo-3-chloropropane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2,4-Trimethylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Hexachlorobutadiene	ND	4.00		µg/L	1	10/18/2012 5:16:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210121**

Date Reported: **10/24/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/15/2012 10:10:00 A

Project: Rufus

Lab ID: 1210121-002 **Matrix:** Water

Client Sample ID: MW-21-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: R6252		Analyst: EM
Naphthalene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2,3-Trichlorobenzene	ND	4.00		µg/L	1	10/18/2012 5:16:00 AM
Surr: 1-Bromo-4-fluorobenzene	87.8	79.2-120		%REC	1	10/18/2012 5:16:00 AM
Surr: Dibromofluoromethane	114	76-114	S	%REC	1	10/18/2012 5:16:00 AM
Surr: Toluene-d8	96.5	86.8-119		%REC	1	10/18/2012 5:16:00 AM

NOTES:

S - Outlying QC recoveries were associated with this sample (Dibromofluoromethane). The method is in control as indicated by the LCS and Method Blank.

Dissolved Metals by EPA Method 200.8				Batch ID: 3487		Analyst: SG
Arsenic	1.06	1.00		µg/L	1	10/19/2012 9:19:43 PM
Barium	29.3	0.500		µg/L	1	10/23/2012 2:06:57 PM
Cadmium	ND	0.200		µg/L	1	10/19/2012 9:19:43 PM
Chromium	ND	0.500		µg/L	1	10/19/2012 9:19:43 PM
Lead	ND	1.00		µg/L	1	10/19/2012 9:19:43 PM
Selenium	1.19	1.00		µg/L	1	10/19/2012 9:19:43 PM
Silver	0.426	0.200		µg/L	1	10/19/2012 9:19:43 PM
Dissolved Mercury by EPA Method 245.1				Batch ID: 3474		Analyst: MC
Mercury	0.306	0.100		µg/L	1	10/19/2012 3:14:48 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210121**

Date Reported: **10/24/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/15/2012 11:26:00 A

Project: Rufus

Lab ID: 1210121-003 **Matrix:** Water

Client Sample ID: MW-21-3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 3453		Analyst: BR
Diesel (Fuel Oil)	ND	50.0		µg/L	1	10/17/2012 3:56:00 PM
Heavy Oil	ND	100		µg/L	1	10/17/2012 3:56:00 PM
Surr: 2-Fluorobiphenyl	94.1	50-150		%REC	1	10/17/2012 3:56:00 PM
Surr: o-Terphenyl	97.2	50-150		%REC	1	10/17/2012 3:56:00 PM
Gasoline by NWTPH-Gx				Batch ID: R6253		Analyst: EM
Gasoline	ND	50.0		µg/L	1	10/18/2012 6:37:00 AM
Surr: 1,2-Dichloroethane-d4	125	65-135		%REC	1	10/18/2012 6:37:00 AM
Surr: Fluorobenzene	102	65-135		%REC	1	10/18/2012 6:37:00 AM
Volatile Organic Compounds by EPA Method 8260				Batch ID: R6252		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Chloromethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Vinyl chloride	ND	0.200		µg/L	1	10/18/2012 6:37:00 AM
Bromomethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Trichlorofluoromethane (CFC-11)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Chloroethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Methylene chloride	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Methyl tert-butyl ether (MTBE)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1-Dichloroethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
2,2-Dichloropropane	ND	2.00		µg/L	1	10/18/2012 6:37:00 AM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Chloroform	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1,1-Trichloroethane (TCA)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Carbon tetrachloride	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2-Dichloroethane (EDC)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Benzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Trichloroethene (TCE)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2-Dichloropropane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Bromodichloromethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210121**

Date Reported: **10/24/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/15/2012 11:26:00 A

Project: Rufus

Lab ID: 1210121-003 **Matrix:** Water

Client Sample ID: MW-21-3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: R6252		Analyst: EM
Dibromomethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
cis-1,3-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Toluene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
trans-1,3-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1,2-Trichloroethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,3-Dichloropropane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Dibromochloromethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2-Dibromoethane (EDB)	ND	0.0100		µg/L	1	10/18/2012 6:37:00 AM
Chlorobenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1,1,2-Tetrachloroethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Ethylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
m,p-Xylene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
o-Xylene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Styrene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Isopropylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Bromoform	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1,2,2-Tetrachloroethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
n-Propylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Bromobenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,3,5-Trimethylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
2-Chlorotoluene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
4-Chlorotoluene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
tert-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2,3-Trichloropropane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2,4-Trichlorobenzene	ND	2.00		µg/L	1	10/18/2012 6:37:00 AM
sec-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
4-Isopropyltoluene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,3-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,4-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
n-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2-Dibromo-3-chloropropane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2,4-Trimethylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Hexachlorobutadiene	ND	4.00		µg/L	1	10/18/2012 6:37:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1210121**

Date Reported: **10/24/2012**

Client: GeoEngineers, Inc. - Redmond **Collection Date:** 10/15/2012 11:26:00 A

Project: Rufus

Lab ID: 1210121-003 **Matrix:** Water

Client Sample ID: MW-21-3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: R6252		Analyst: EM
Naphthalene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2,3-Trichlorobenzene	ND	4.00		µg/L	1	10/18/2012 6:37:00 AM
Surr: 1-Bromo-4-fluorobenzene	90.8	79.2-120		%REC	1	10/18/2012 6:37:00 AM
Surr: Dibromofluoromethane	113	76-114		%REC	1	10/18/2012 6:37:00 AM
Surr: Toluene-d8	97.1	86.8-119		%REC	1	10/18/2012 6:37:00 AM
Dissolved Metals by EPA Method 200.8				Batch ID: 3487		Analyst: SG
Arsenic	ND	1.00		µg/L	1	10/19/2012 9:28:41 PM
Barium	32.4	0.500		µg/L	1	10/23/2012 2:27:42 PM
Cadmium	ND	0.200		µg/L	1	10/19/2012 9:28:41 PM
Chromium	ND	0.500		µg/L	1	10/19/2012 9:28:41 PM
Lead	ND	1.00		µg/L	1	10/19/2012 9:28:41 PM
Selenium	2.09	1.00		µg/L	1	10/19/2012 9:28:41 PM
Silver	ND	0.200		µg/L	1	10/19/2012 9:28:41 PM
Dissolved Mercury by EPA Method 245.1				Batch ID: 3474		Analyst: MC
Mercury	0.349	0.100		µg/L	1	10/19/2012 3:21:10 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Dissolved Metals by EPA Method 200.8

Sample ID: **MB-3487**	SampType: **MBLK**	Units: **µg/L**	Prep Date: **10/19/2012**	RunNo: **6237**
Client ID: **MBLKW**	Batch ID: **3487**		Analysis Date: **10/19/2012**	SeqNo: **123913**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	1.00									
Cadmium	ND	0.200									
Chromium	ND	0.500									
Lead	ND	1.00									
Selenium	ND	1.00									
Silver	ND	0.200									

Sample ID: **LCS-3487**	SampType: **LCS**	Units: **µg/L**	Prep Date: **10/19/2012**	RunNo: **6237**
Client ID: **LCSW**	Batch ID: **3487**		Analysis Date: **10/19/2012**	SeqNo: **123914**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	99.2	1.00	100.0	0	99.2	85	115				
Cadmium	4.99	0.200	5.000	0	99.9	85	115				
Chromium	99.5	0.500	100.0	0	99.5	85	115				
Lead	52.8	1.00	50.00	0	106	85	115				
Selenium	9.95	1.00	10.00	0	99.5	85	115				
Silver	26.5	0.200	25.00	0	106	85	115				

Sample ID: **1210121-001CDUP**	SampType: **DUP**	Units: **µg/L**	Prep Date: **10/19/2012**	RunNo: **6237**
Client ID: **MW-21-1**	Batch ID: **3487**		Analysis Date: **10/19/2012**	SeqNo: **123916**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	1.00						0	200	30	R
Cadmium	ND	0.200						0	0	30	
Chromium	ND	0.500						0	0	30	
Lead	ND	1.00						0	0	30	
Selenium	ND	1.00						1.300	200	30	R
Silver	ND	0.200						0.4440	200	30	R

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Dissolved Metals by EPA Method 200.8

Sample ID: **1210121-001CDUP** SampType: **DUP** Units: **µg/L** Prep Date: **10/19/2012** RunNo: **6237**
Client ID: **MW-21-1** Batch ID: **3487** Analysis Date: **10/19/2012** SeqNo: **123916**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.

Sample ID: **1210121-001CMS** SampType: **MS** Units: **µg/L** Prep Date: **10/19/2012** RunNo: **6237**
Client ID: **MW-21-1** Batch ID: **3487** Analysis Date: **10/19/2012** SeqNo: **123917**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	503	1.00	500.0	0.7395	100	70	130				
Cadmium	25.0	0.200	25.00	0	99.9	70	130				
Chromium	454	0.500	500.0	0	90.7	70	130				
Lead	253	1.00	250.0	0	101	70	130				
Selenium	49.8	1.00	50.00	1.300	97.0	70	130				
Silver	127	0.200	125.0	0.4440	101	70	130				

Sample ID: **1210121-001CMSD** SampType: **MSD** Units: **µg/L** Prep Date: **10/19/2012** RunNo: **6237**
Client ID: **MW-21-1** Batch ID: **3487** Analysis Date: **10/19/2012** SeqNo: **123918**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	507	1.00	500.0	0.7395	101	70	130	502.7	0.946	30	
Cadmium	25.4	0.200	25.00	0	102	70	130	24.98	1.58	30	
Chromium	456	0.500	500.0	0	91.1	70	130	453.7	0.427	30	
Lead	254	1.00	250.0	0	101	70	130	252.5	0.465	30	
Selenium	49.5	1.00	50.00	1.300	96.3	70	130	49.82	0.721	30	
Silver	123	0.200	125.0	0.4440	97.7	70	130	126.8	3.38	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Dissolved Metals by EPA Method 200.8

Sample ID: **MB-3487**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **10/19/2012**		RunNo: **6274**		
Client ID: **MBLKW**	Batch ID: **3487**					Analysis Date: **10/23/2012**		SeqNo: **124535**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	0.500									

Sample ID: **LCS-3487**	SampType: **LCS**			Units: **µg/L**		Prep Date: **10/19/2012**		RunNo: **6274**		
Client ID: **LCSW**	Batch ID: **3487**					Analysis Date: **10/23/2012**		SeqNo: **124536**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	97.9	0.500	100.0	0	97.9	85	115				

Sample ID: **1210121-001CDUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **10/19/2012**		RunNo: **6274**		
Client ID: **MW-21-1**	Batch ID: **3487**					Analysis Date: **10/23/2012**		SeqNo: **124538**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	30.5	0.500						28.27	7.57	30	

Sample ID: **1210121-001CMS**	SampType: **MS**			Units: **µg/L**		Prep Date: **10/19/2012**		RunNo: **6274**		
Client ID: **MW-21-1**	Batch ID: **3487**					Analysis Date: **10/23/2012**		SeqNo: **124539**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	511	0.500	500.0	28.27	96.5	70	130				

Sample ID: **1210121-001CMSD**	SampType: **MSD**			Units: **µg/L**		Prep Date: **10/19/2012**		RunNo: **6274**		
Client ID: **MW-21-1**	Batch ID: **3487**					Analysis Date: **10/23/2012**		SeqNo: **124540**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	508	0.500	500.0	28.27	95.9	70	130	510.8	0.586	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Date: *10/24/2012*

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Dissolved Mercury by EPA Method 245.1

Sample ID: **MB-3474**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **10/19/2012**		RunNo: **6227**			
Client ID: **MBLKW**	Batch ID: **3474**					Analysis Date: **10/19/2012**		SeqNo: **123841**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.100									

Sample ID: **LCS-3474**	SampType: **LCS**			Units: **µg/L**		Prep Date: **10/19/2012**		RunNo: **6227**			
Client ID: **LCSW**	Batch ID: **3474**					Analysis Date: **10/19/2012**		SeqNo: **123842**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.09	0.100	2.000	0	104	85	115				

Sample ID: **1210099-015BDUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **10/19/2012**		RunNo: **6227**			
Client ID: **BATCH**	Batch ID: **3474**					Analysis Date: **10/19/2012**		SeqNo: **123844**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.100						0	0	20	

Sample ID: **1210099-015BMS**	SampType: **MS**			Units: **µg/L**		Prep Date: **10/19/2012**		RunNo: **6227**			
Client ID: **BATCH**	Batch ID: **3474**					Analysis Date: **10/19/2012**		SeqNo: **123845**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.19	0.100	2.000	0	110	80	120				

Sample ID: **1210099-015BMSD**	SampType: **MSD**			Units: **µg/L**		Prep Date: **10/19/2012**		RunNo: **6227**			
Client ID: **BATCH**	Batch ID: **3474**					Analysis Date: **10/19/2012**		SeqNo: **123846**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.20	0.100	2.000	0	110	80	120	2.190	0.456	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Date: *10/24/2012*

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **LCS-3453**	SampType: **LCS**			Units: **µg/L**		Prep Date: **10/16/2012**		RunNo: **6175**			
Client ID: **LCSW**	Batch ID: **3453**					Analysis Date: **10/17/2012**		SeqNo: **122898**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	2,360	50.0	2,000	0	118	65	135				
Surr: 2-Fluorobiphenyl	166		160.0		104	50	150				
Surr: o-Terphenyl	172		160.0		107	50	150				

Sample ID: **MB-3453**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **10/16/2012**		RunNo: **6175**			
Client ID: **MBLKW**	Batch ID: **3453**					Analysis Date: **10/17/2012**		SeqNo: **122899**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Surr: 2-Fluorobiphenyl	162		160.0		101	50	150				
Surr: o-Terphenyl	167		160.0		104	50	150				

Sample ID: **1210121-003BDUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **10/16/2012**		RunNo: **6175**			
Client ID: **MW-21-3**	Batch ID: **3453**					Analysis Date: **10/17/2012**		SeqNo: **123274**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0						0	0	30	
Heavy Oil	ND	100						0	0	30	
Surr: 2-Fluorobiphenyl	179		160.0		112	50	150		0		
Surr: o-Terphenyl	181		160.0		113	50	150		0		

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Date: *10/24/2012*

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **1210141-035ADUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **10/18/2012**		RunNo: **6253**			
Client ID: **BATCH**	Batch ID: **R6253**					Analysis Date: **10/18/2012**		SeqNo: **124215**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0						0	0	30	
Surr: 1,2-Dichloroethane-d4	11.7		10.00		117	65	135		0		
Surr: Fluorobenzene	9.80		10.00		98.0	65	135		0		

Sample ID: **LCS-R6253**	SampType: **LCS**			Units: **µg/L**		Prep Date: **10/17/2012**		RunNo: **6253**			
Client ID: **LCSW**	Batch ID: **R6253**					Analysis Date: **10/17/2012**		SeqNo: **124218**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	503	50.0	500.0	0	101	65	135				
Surr: 1,2-Dichloroethane-d4	12.2		10.00		122	65	135				
Surr: Fluorobenzene	10.0		10.00		100	65	135				

Sample ID: **MB-R6253**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **10/17/2012**		RunNo: **6253**			
Client ID: **MBLKW**	Batch ID: **R6253**					Analysis Date: **10/17/2012**		SeqNo: **124219**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0									
Surr: 1,2-Dichloroethane-d4	11.3		10.00		113	65	135				
Surr: Fluorobenzene	11.3		10.00		113	65	135				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210121-002AMS** SampType: **MS** Units: **µg/L** Prep Date: **10/18/2012** RunNo: **6252**
Client ID: **MW-21-2** Batch ID: **R6252** Analysis Date: **10/18/2012** SeqNo: **124201**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	16.7	1.00	20.00	0	83.6	33.3	122				
Chloromethane	24.8	0.500	20.00	0	124	48.2	145				
Vinyl chloride	23.8	0.200	20.00	0	119	45.6	149				
Bromomethane	27.8	0.500	20.00	0	139	31.5	135				S
Trichlorofluoromethane (CFC-11)	22.9	0.500	20.00	0	114	54.7	138				
Chloroethane	28.8	0.500	20.00	0	144	52.7	140				S
1,1-Dichloroethene	26.8	0.500	20.00	0	134	58.2	146				
Methylene chloride	24.9	1.00	20.00	0	124	65.1	127				
trans-1,2-Dichloroethene	19.5	0.500	20.00	0	97.4	69	132				
Methyl tert-butyl ether (MTBE)	20.2	1.00	20.00	0	101	70	130				
1,1-Dichloroethane	24.9	0.500	20.00	0	125	74.7	133				
2,2-Dichloropropane	16.5	1.00	20.00	0	82.5	31.5	121				
cis-1,2-Dichloroethene	20.9	0.500	20.00	0	105	67.1	123				
Chloroform	20.1	1.00	20.00	0	100	58.6	123				
1,1,1-Trichloroethane (TCA)	23.2	0.500	20.00	0	116	64.2	146				
1,1-Dichloropropene	21.1	0.500	20.00	0	106	73.8	136				
Carbon tetrachloride	25.5	0.500	20.00	0	128	69.2	141				
1,2-Dichloroethane (EDC)	24.5	0.500	20.00	0	123	62.3	130				
Benzene	20.9	1.00	20.00	0	105	68.7	132				
Trichloroethene (TCE)	18.1	0.500	20.00	0	90.7	65.7	133				
1,2-Dichloropropane	23.9	0.500	20.00	0	119	70	130				
Bromodichloromethane	19.8	0.500	20.00	0	99.1	59.4	139				
Dibromomethane	19.5	0.500	20.00	0	97.6	65.5	130				
cis-1,3-Dichloropropene	19.6	0.500	20.00	0	98.0	63.3	124				
Toluene	19.2	1.00	20.00	0	96.0	68.4	133				
trans-1,3-Dichloropropene	14.6	0.500	20.00	0	72.9	57.7	125				
1,1,2-Trichloroethane	18.3	0.500	20.00	0	91.7	59.4	127				
1,3-Dichloropropane	19.2	0.500	20.00	0	96.1	68.2	134				
Tetrachloroethene (PCE)	14.4	0.500	20.00	0	72.2	51.5	109				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210121-002AMS** SampType: **MS** Units: **µg/L** Prep Date: **10/18/2012** RunNo: **6252**
Client ID: **MW-21-2** Batch ID: **R6252** Analysis Date: **10/18/2012** SeqNo: **124201**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	23.4	0.500	20.00	0	117	66.2	138				
1,2-Dibromoethane (EDB)	20.9	0.200	20.00	0	104	68.9	124				
Chlorobenzene	19.0	0.500	20.00	0	95.2	68.9	128				
1,1,1,2-Tetrachloroethane	23.4	0.500	20.00	0	117	67.3	135				
Ethylbenzene	18.0	1.00	20.00	0	90.0	67.3	135				
m,p-Xylene	35.2	1.00	40.00	0	87.9	63.3	135				
o-Xylene	18.2	1.00	20.00	0	90.9	67.8	131				
Styrene	18.2	1.00	20.00	0	90.8	67.2	123				
Isopropylbenzene	19.2	1.00	20.00	0	96.2	56	147				
Bromoform	23.4	0.500	20.00	0	117	61.4	136				
1,1,2,2-Tetrachloroethane	20.0	0.500	20.00	0	99.9	59.1	137				
n-Propylbenzene	17.0	1.00	20.00	0	84.8	57.6	142				
Bromobenzene	22.6	0.500	20.00	0	113	63.6	130				
1,3,5-Trimethylbenzene	18.8	1.00	20.00	0	94.0	59.9	136				
2-Chlorotoluene	17.2	0.500	20.00	0	86.0	63.4	134				
4-Chlorotoluene	16.8	0.500	20.00	0	84.0	58.4	134				
tert-Butylbenzene	25.9	1.00	20.00	0	130	74.2	141				
1,2,3-Trichloropropane	19.5	0.500	20.00	0	97.4	62.4	129				
1,2,4-Trichlorobenzene	18.5	1.00	20.00	0	92.3	53.7	120				
sec-Butylbenzene	18.3	1.00	20.00	0	91.3	56	146				
4-Isopropyltoluene	19.1	1.00	20.00	0	95.3	62.4	134				
1,3-Dichlorobenzene	20.2	0.500	20.00	0	101	58.2	128				
1,4-Dichlorobenzene	19.7	0.500	20.00	0	98.4	60.1	123				
n-Butylbenzene	13.9	1.00	20.00	0	69.6	54.6	135				
1,2-Dichlorobenzene	20.0	0.500	20.00	0	100	62.6	124				
1,2-Dibromo-3-chloropropane	16.8	0.500	20.00	0	84.2	51.8	142				
1,2,4-Trimethylbenzene	18.8	1.00	20.00	0	93.9	63.7	132				
Hexachlorobutadiene	19.3	2.00	20.00	0	96.5	62.1	121				
Naphthalene	19.5	1.00	20.00	0	97.6	58.7	119				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210121-002AMS** SampType: **MS** Units: **µg/L** Prep Date: **10/18/2012** RunNo: **6252**
Client ID: **MW-21-2** Batch ID: **R6252** Analysis Date: **10/18/2012** SeqNo: **124201**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	19.3	2.00	20.00	0	96.5	50.7	113				
Surr: 1-Bromo-4-fluorobenzene	9.15		10.00		91.5	79.2	120				
Surr: Dibromofluoromethane	11.1		10.00		111	76	114				
Surr: Toluene-d8	9.71		10.00		97.1	86.8	119				

NOTES:
S - Outlying QC recoveries were associated with this sample. The method is in control as indicated by the LCS.

Sample ID: **1210141-035ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **10/18/2012** RunNo: **6252**
Client ID: **BATCH** Batch ID: **R6252** Analysis Date: **10/18/2012** SeqNo: **124204**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	1.00						0	0	30	
Chloromethane	ND	0.500						0	0	30	
Vinyl chloride	ND	0.200						0	0	30	
Bromomethane	ND	0.500						0	0	30	
Trichlorofluoromethane (CFC-11)	ND	0.500						0	0	30	
Chloroethane	ND	0.500						0	0	30	
1,1-Dichloroethene	ND	0.500						0	0	30	
Methylene chloride	ND	1.00						0	0	30	
trans-1,2-Dichloroethene	ND	0.500						0	0	30	
Methyl tert-butyl ether (MTBE)	ND	1.00						0	0	30	
1,1-Dichloroethane	ND	0.500						0	0	30	
2,2-Dichloropropane	ND	1.00						0	0	30	
cis-1,2-Dichloroethene	ND	0.500						0	0	30	
Chloroform	ND	1.00						0	0	30	
1,1,1-Trichloroethane (TCA)	ND	0.500						0	0	30	
1,1-Dichloropropene	ND	0.500						0	0	30	
Carbon tetrachloride	ND	0.500						0	0	30	
1,2-Dichloroethane (EDC)	ND	0.500						0	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210141-035ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **10/18/2012** RunNo: **6252**
Client ID: **BATCH** Batch ID: **R6252** Analysis Date: **10/18/2012** SeqNo: **124204**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00						0	0	30	
Trichloroethene (TCE)	ND	0.500						0	0	30	
1,2-Dichloropropane	ND	0.500						0	0	30	
Bromodichloromethane	ND	0.500						0	0	30	
Dibromomethane	ND	0.500						0	0	30	
cis-1,3-Dichloropropene	ND	0.500						0	0	30	
Toluene	ND	1.00						0	0	30	
trans-1,3-Dichloropropene	ND	0.500						0	0	30	
1,1,2-Trichloroethane	ND	0.500						0	0	30	
1,3-Dichloropropane	ND	0.500						0	0	30	
Tetrachloroethene (PCE)	ND	0.500						0	0	30	
Dibromochloromethane	ND	0.500						0	0	30	
1,2-Dibromoethane (EDB)	ND	0.200						0	0	30	
Chlorobenzene	ND	0.500						0	0	30	
1,1,1,2-Tetrachloroethane	ND	0.500						0	0	30	
Ethylbenzene	ND	1.00						0	0	30	
m,p-Xylene	ND	1.00						0	0	30	
o-Xylene	ND	1.00						0	0	30	
Styrene	ND	1.00						0	0	30	
Isopropylbenzene	ND	1.00						0	0	30	
Bromoform	ND	0.500						0	0	30	
1,1,2,2-Tetrachloroethane	ND	0.500						0	0	30	
n-Propylbenzene	ND	1.00						0	0	30	
Bromobenzene	ND	0.500						0	0	30	
1,3,5-Trimethylbenzene	ND	1.00						0	0	30	
2-Chlorotoluene	ND	0.500						0	0	30	
4-Chlorotoluene	ND	0.500						0	0	30	
tert-Butylbenzene	ND	1.00						0	0	30	
1,2,3-Trichloropropane	ND	0.500						0	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **1210141-035ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **10/18/2012** RunNo: **6252**
Client ID: **BATCH** Batch ID: **R6252** Analysis Date: **10/18/2012** SeqNo: **124204**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	ND	1.00						0	0	30	
sec-Butylbenzene	ND	1.00						0	0	30	
4-Isopropyltoluene	ND	1.00						0	0	30	
1,3-Dichlorobenzene	ND	0.500						0	0	30	
1,4-Dichlorobenzene	ND	0.500						0	0	30	
n-Butylbenzene	ND	1.00						0	0	30	
1,2-Dichlorobenzene	ND	0.500						0	0	30	
1,2-Dibromo-3-chloropropane	ND	0.500						0	0	30	
1,2,4-Trimethylbenzene	ND	1.00						0	0	30	
Hexachlorobutadiene	ND	2.00						0	0	30	
Naphthalene	ND	1.00						0	0	30	
1,2,3-Trichlorobenzene	ND	2.00						0	0	30	
Surr: 1-Bromo-4-fluorobenzene	9.06		10.00		90.6	79.2	120		0		
Surr: Dibromofluoromethane	11.4		10.00		114	76	114		0		
Surr: Toluene-d8	9.73		10.00		97.3	86.8	119		0		

Sample ID: **LCS-R6252** SampType: **LCS** Units: **µg/L** Prep Date: **10/17/2012** RunNo: **6252**
Client ID: **LCSW** Batch ID: **R6252** Analysis Date: **10/17/2012** SeqNo: **124208**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	18.7	1.00	20.00	0	93.6	45.1	121				
Chloromethane	20.7	0.500	20.00	0	104	42.5	131				
Vinyl chloride	19.8	0.200	20.00	0	98.8	56.2	130				
Bromomethane	22.8	0.500	20.00	0	114	45.4	138				
Trichlorofluoromethane (CFC-11)	22.1	0.500	20.00	0	110	64.7	129				
Chloroethane	19.2	0.500	20.00	0	96.0	62.5	123				
1,1-Dichloroethene	20.9	0.500	20.00	0	104	60.7	146				
Methylene chloride	20.2	1.00	20.00	0	101	60.3	135				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **LCS-R6252** SampType: **LCS** Units: **µg/L** Prep Date: **10/17/2012** RunNo: **6252**
Client ID: **LCSW** Batch ID: **R6252** Analysis Date: **10/17/2012** SeqNo: **124208**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,2-Dichloroethene	21.0	0.500	20.00	0	105	71.3	129				
Methyl tert-butyl ether (MTBE)	19.8	1.00	20.00	0	99.1	75.4	123				
1,1-Dichloroethane	20.0	0.500	20.00	0	99.8	71.3	129				
2,2-Dichloropropane	18.0	1.00	20.00	0	89.8	37.8	132				
cis-1,2-Dichloroethene	20.0	0.500	20.00	0	100	67.5	127				
Chloroform	20.6	1.00	20.00	0	103	70.3	123				
1,1,1-Trichloroethane (TCA)	20.4	0.500	20.00	0	102	67.9	134				
1,1-Dichloropropene	20.8	0.500	20.00	0	104	72.1	133				
Carbon tetrachloride	20.2	0.500	20.00	0	101	68	136				
1,2-Dichloroethane (EDC)	20.3	0.500	20.00	0	101	65.8	126				
Benzene	20.5	1.00	20.00	0	102	75.2	124				
Trichloroethene (TCE)	21.3	0.500	20.00	0	106	71.9	130				
1,2-Dichloropropane	19.8	0.500	20.00	0	98.8	71.9	131				
Bromodichloromethane	19.8	0.500	20.00	0	99.0	70	130				
Dibromomethane	19.8	0.500	20.00	0	99.1	74.2	125				
cis-1,3-Dichloropropene	19.6	0.500	20.00	0	97.9	62.8	135				
Toluene	19.9	1.00	20.00	0	99.3	75.2	129				
trans-1,3-Dichloropropene	20.8	0.500	20.00	0	104	58.1	138				
1,1,2-Trichloroethane	19.7	0.500	20.00	0	98.6	65.4	128				
1,3-Dichloropropane	19.7	0.500	20.00	0	98.6	71.9	131				
Tetrachloroethene (PCE)	20.4	0.500	20.00	0	102	52.4	140				
Dibromochloromethane	19.6	0.500	20.00	0	98.2	68.7	139				
1,2-Dibromoethane (EDB)	19.7	0.200	20.00	0	98.5	71.2	129				
Chlorobenzene	20.0	0.500	20.00	0	99.8	77.2	122				
1,1,1,2-Tetrachloroethane	19.9	0.500	20.00	0	99.6	76.2	130				
Ethylbenzene	19.9	1.00	20.00	0	99.7	78	127				
m,p-Xylene	40.4	1.00	40.00	0	101	77.5	130				
o-Xylene	20.4	1.00	20.00	0	102	77.6	126				
Styrene	20.4	1.00	20.00	0	102	66.8	137				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **LCS-R6252** SampType: **LCS** Units: **µg/L** Prep Date: **10/17/2012** RunNo: **6252**
Client ID: **LCSW** Batch ID: **R6252** Analysis Date: **10/17/2012** SeqNo: **124208**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Isopropylbenzene	20.2	1.00	20.00	0	101	75.9	133				
Bromoform	19.8	0.500	20.00	0	99.2	69.9	142				
1,1,2,2-Tetrachloroethane	18.1	0.500	20.00	0	90.4	68	134				
n-Propylbenzene	20.0	1.00	20.00	0	100	77.1	133				
Bromobenzene	20.0	0.500	20.00	0	100	71.1	131				
1,3,5-Trimethylbenzene	19.7	1.00	20.00	0	98.6	76.2	133				
2-Chlorotoluene	20.0	0.500	20.00	0	100	67.1	137				
4-Chlorotoluene	19.7	0.500	20.00	0	98.6	70.7	132				
tert-Butylbenzene	19.4	1.00	20.00	0	96.8	71.3	139				
1,2,3-Trichloropropane	20.4	0.500	20.00	0	102	70.8	132				
1,2,4-Trichlorobenzene	20.5	1.00	20.00	0	103	61.4	139				
sec-Butylbenzene	19.4	1.00	20.00	0	97.1	77.4	136				
4-Isopropyltoluene	20.0	1.00	20.00	0	100	78.1	131				
1,3-Dichlorobenzene	20.7	0.500	20.00	0	104	73.5	125				
1,4-Dichlorobenzene	20.8	0.500	20.00	0	104	71.4	125				
n-Butylbenzene	20.5	1.00	20.00	0	103	69.8	138				
1,2-Dichlorobenzene	20.7	0.500	20.00	0	104	74.2	123				
1,2-Dibromo-3-chloropropane	20.7	0.500	20.00	0	103	66.1	138				
1,2,4-Trimethylbenzene	19.6	1.00	20.00	0	98.2	72.3	133				
Hexachlorobutadiene	19.9	2.00	20.00	0	99.4	60.9	141				
Naphthalene	20.7	1.00	20.00	0	104	58.2	140				
1,2,3-Trichlorobenzene	20.3	2.00	20.00	0	102	61.3	133				
Surr: 1-Bromo-4-fluorobenzene	10.2		10.00		103	79.2	120				
Surr: Dibromofluoromethane	10.0		10.00		100	76	114				
Surr: Toluene-d8	10.0		10.00		101	86.8	119				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **MB-R6252** SampType: **MBLK** Units: **µg/L** Prep Date: **10/17/2012** RunNo: **6252**
Client ID: **MBLKW** Batch ID: **R6252** Analysis Date: **10/17/2012** SeqNo: **124209**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	1.00									
Chloromethane	ND	0.500									
Vinyl chloride	ND	0.200									
Bromomethane	ND	0.500									
Trichlorofluoromethane (CFC-11)	ND	0.500									
Chloroethane	ND	0.500									
1,1-Dichloroethene	ND	0.500									
Methylene chloride	ND	1.00									
trans-1,2-Dichloroethene	ND	0.500									
Methyl tert-butyl ether (MTBE)	ND	1.00									
1,1-Dichloroethane	ND	0.500									
2,2-Dichloropropane	ND	1.00									
cis-1,2-Dichloroethene	ND	0.500									
Chloroform	ND	1.00									
1,1,1-Trichloroethane (TCA)	ND	0.500									
1,1-Dichloropropene	ND	0.500									
Carbon tetrachloride	ND	0.500									
1,2-Dichloroethane (EDC)	ND	0.500									
Benzene	ND	1.00									
Trichloroethene (TCE)	ND	0.500									
1,2-Dichloropropane	ND	0.500									
Bromodichloromethane	ND	0.500									
Dibromomethane	ND	0.500									
cis-1,3-Dichloropropene	ND	0.500									
Toluene	ND	1.00									
trans-1,3-Dichloropropene	ND	0.500									
1,1,2-Trichloroethane	ND	0.500									
1,3-Dichloropropane	ND	0.500									
Tetrachloroethene (PCE)	ND	0.500									

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **MB-R6252** SampType: **MBLK** Units: **µg/L** Prep Date: **10/17/2012** RunNo: **6252**
Client ID: **MBLKW** Batch ID: **R6252** Analysis Date: **10/17/2012** SeqNo: **124209**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	0.500									
1,2-Dibromoethane (EDB)	ND	0.200									
Chlorobenzene	ND	0.500									
1,1,1,2-Tetrachloroethane	ND	0.500									
Ethylbenzene	ND	1.00									
m,p-Xylene	ND	1.00									
o-Xylene	ND	1.00									
Styrene	ND	1.00									
Isopropylbenzene	ND	1.00									
Bromoform	ND	0.500									
1,1,2,2-Tetrachloroethane	ND	0.500									
n-Propylbenzene	ND	1.00									
Bromobenzene	ND	0.500									
1,3,5-Trimethylbenzene	ND	1.00									
2-Chlorotoluene	ND	0.500									
4-Chlorotoluene	ND	0.500									
tert-Butylbenzene	ND	1.00									
1,2,3-Trichloropropane	ND	0.500									
1,2,4-Trichlorobenzene	ND	1.00									
sec-Butylbenzene	ND	1.00									
4-Isopropyltoluene	ND	1.00									
1,3-Dichlorobenzene	ND	0.500									
1,4-Dichlorobenzene	ND	0.500									
n-Butylbenzene	ND	1.00									
1,2-Dichlorobenzene	ND	0.500									
1,2-Dibromo-3-chloropropane	ND	0.500									
1,2,4-Trimethylbenzene	ND	1.00									
Hexachlorobutadiene	ND	2.00									
Naphthalene	ND	1.00									

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: **MB-R6252** SampType: **MBLK** Units: **µg/L** Prep Date: **10/17/2012** RunNo: **6252**
Client ID: **MBLKW** Batch ID: **R6252** Analysis Date: **10/17/2012** SeqNo: **124209**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	ND	2.00									
Surr: 1-Bromo-4-fluorobenzene	10.0		10.00		100	79.2	120				
Surr: Dibromofluoromethane	10.1		10.00		101	76	114				
Surr: Toluene-d8	9.87		10.00		98.7	86.8	119				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Sample Log-In Check List

Client Name: **GEI1**	Work Order Number: **1210121**
Logged by: **Troy Zehr**	Date Received: **10/15/2012 2:05:00 PM**

Chain of Custody

1.	Were custodial seals present?	Yes	☐	No	☐	Not Required	☑
2.	Is Chain of Custody complete?	Yes	☑	No	☐	Not Present	☐
3.	How was the sample delivered?	Client					

Log In

4.	Coolers are present?	Yes	☑	No	☐	NA	☐
5.	Was an attempt made to cool the samples?	Yes	☑	No	☐	NA	☐
6.	Were all coolers received at a temperature of >0° C to 10.0°C	Yes	☑	No	☐	NA	☐
7.	Sample(s) in proper container(s)?	Yes	☑	No	☐		
8.	Sufficient sample volume for indicated test(s)?	Yes	☑	No	☐		
9.	Are samples properly preserved?	Yes	☑	No	☐		
10.	Was preservative added to bottles?	Yes	☐	No	☑	NA	☐
11.	Is there headspace present in VOA vials?	Yes	☐	No	☑	NA	☐
12.	Did all sample containers arrive in good condition?(unbroken)	Yes	☑	No	☐		
13.	Does paperwork match bottle labels?	Yes	☑	No	☐		
14.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No	☐		
15.	Is it clear what analyses were requested?	Yes	☑	No	☐		
16.	Were all holding times able to be met?	Yes	☑	No	☐		

Special Handling (if applicable)

17.	Was client notified of all discrepancies with this order?	Yes	☐	No	☐	NA	☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

18. Additional remarks/Disrepancies

Item Information

Item #	Temp ºC	Condition
Cooler	3.2	Good
Temp Blank	5.9	Good

Fremont Analytical

Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): 1210121

Date: 10-15-12

Page: _____ of: _____

Client: GEOENGINEERS
Address:
City, State, Zip: REDMOND, WA. Tel: 425-861-6000
Reports To (PM): CHRIS BROWN Fax: Email:

Project Name: RUFUS
Location: SEATTLE, WA.
Collected by: BRIAN ANDERSON
Project No: 20434-001-11

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260B)	GX/BTEX by EPA 8021b	BTEX by EPA 8260	Gasoline Range Organics	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)**	NWTPH-Dx	NWTPH-Gx	RCRA-8 METALS 0.45 FILTERED	Comments/Depth
1	MW-21-1	10-15-12	1236	W	X														X	X	X	
2	MW-21-2	10-15-12	1010	W	X														X	X	X	
3	MW-21-3	10-15-12	1126	W	X														X	X	X	
4																						
5																						
6																						
7																						
8																						
9																						
10																						

*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

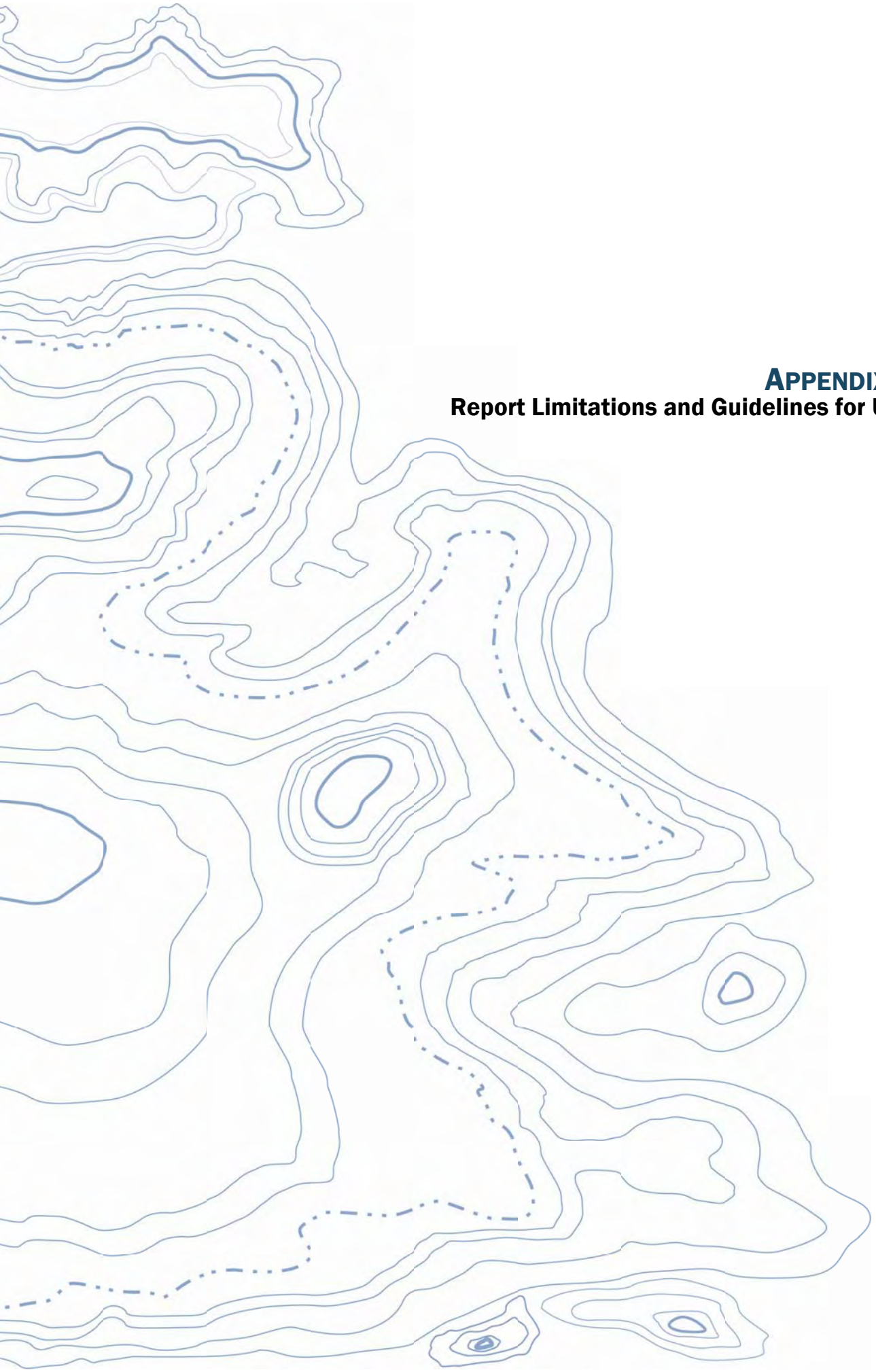
Relinquished	Date/Time	Received	Date/Time
x Brian Anderson	10-15-12	x	10/15/12 1405
x		x	

Special Remarks:
*DISSOLVED METALS SAMPLES NEED TO BE FILTERED.
6000 / 7000 SERIES

TAT --> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

www.fremontanalytical.com



APPENDIX E
Report Limitations and Guidelines for Use

APPENDIX E
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

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

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.

Environmental Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of Acorn Development, LLC their authorized agents and regulatory agencies. 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 or remedial action 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 Acorn Development, LLC should rely on this plan 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 applies to Block 21 in the Denny Triangle neighborhood of Seattle, 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.

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[1] Developed based on material provided by ASFE, Professional Firms Practicing in the GeoSciences, www.asfe.org.

If important changes are made after the date of this remedial action plan, 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

No third party may rely on the product of our services unless GeoEngineers agrees in advance, and in writing to such reliance. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions.

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.

Subsurface Conditions Can Change

This report is based on conditions that existed at the time our site studies were 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.

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

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 reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

Geotechnical, Geologic and Environmental 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.

Most Environmental Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from the sampling locations at the site documented in past reports. 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. There is always a potential that areas of contamination exist in portions of the site that were not sampled or tested during this or previous studies. Our remedial action plan, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.