Block 20 Right-of-Way Soil Characterization Report and Environmental Construction Contingency Plan

Rufus 2.0 Development
Block 20 Denny Triangle
Seattle, Washington 98101

for

Acorn Development, LLC

November 13, 2014

GeoEngineers
Earth Science + Technology

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GeoEngineers

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600 Stewart Street, Suite 1700
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206.728.2674

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Rufus 2.0 Development
Block 20, Denny Triangle
Seattle, Washington 98101

File No. 20434-001-23

November 13, 2014

Prepared for:

Acorn Development, LLC
c/o Seneca Group
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Seattle, Washington 98101

Attention: John Schoettler

Prepared by:

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GeoEngineers

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1.0 INTRODUCTION

This report presents both (1) soil characterization results from potholes completed in Rights of Way surrounding the Block 20 redevelopment property and (2) an Environmental Construction Contingency Plan (CCP). The CCP includes soil handling recommendations to be utilized during construction activities within City of Seattle right-of-ways (ROWs) adjacent to the Block 20 redevelopment in the Denny Triangle Neighborhood in downtown Seattle, Washington.

Block 20 is comprised of four adjoining tax parcels (06000-0270, 0275, 0280 and 0320) and is bounded by Blanchard Street to the north, 8th Avenue to the east, Lenora Street to the south and 7th Avenue to the west. The Block 20 redevelopment project is one phase of a multi-office-tower redevelopment project that spans three contiguous city blocks. The redevelopment project is known as the Rufus 2.0 redevelopment. Development activities for the three blocks consists of demolition of the existing buildings, vacation of utilities located in the alleys, and construction of a multi-building office complex with three 36-story towers and underground parking beneath each block. Of importance to this report is the environmental characterization that GeoEngineers completed to support utility installation around the perimeter of the Block 20 project in City rights of ways.

Environmental studies have been completed to evaluate soil conditions prior to starting excavation and redevelopment activities. The soil testing results form the basis for this Soil Characterization and Construction Contingency Plan and are being used to coordinate the management of "contaminated" soil, "impacted" soil, and "clean" soil (as defined and described in Sections 3.0 and 4.0 of this document) for the installation of new utilities for the Block 20 project.

Block 20 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 soil sample locations, is shown on the Right of Way Soil Management Cells, Figure 2.

2.0 RIGHT-OF-WAY SOIL CHARACTERIZATION ACTIVITIES AND CHEMICAL ANALYTICAL RESULTS

Potholing activities were completed within the City of Seattle ROW in Blanchard Street, 8th Avenue, Westlake Avenue, and Lenora Street adjacent to the Subject Property for utility verification purposes associated with the Rufus 2.0 Block 20 redevelopment project. Discrete soil samples were obtained from the potholes for field screening and chemical analysis for waste characterization purposes. Select discrete samples obtained in locations where several potholes were completed within a small area were composited by the analytical laboratory. For purposes of this study, the ROWs adjoining the Subject Property were divided into soil characterization units or "cells" named A through J for soil characterization purposes. Field screening evidence of soil contamination was not observed in the soil samples obtained from the potholes.

Petroleum hydrocarbons were not detected in soil samples obtained within each of the cells, with the exception of Cell G where heavy-oil range petroleum hydrocarbons were detected at a concentration less than the MTCA Method A cleanup level. Chromium and/or lead were detected at concentrations above the natural background levels in Cells A and J, however, the detected lead and chromium concentrations were well below MTCA Method A cleanup levels. Because background levels of metals vary regionally, we do not recommend special handling requirements for soil in Cells A and J.

A site plan showing the approximate locations of the cells and the sample locations is presented in Soil Management Cells, Figure 2. Chemical analytical results are summarized in Table 1. Field activities are described in Appendix A. Laboratory reports are included in Appendix C.

3.0 SOIL CATEGORIES AND DEFINITIONS

3.1. Contaminated Soil

For the purposes of soil handling for the Rufus 2.0 Block 20 ROW construction activities, soils are considered "contaminated" and not acceptable for unrestricted end-use if:

- Contaminant concentrations for any analyte exceed regulatory cleanup levels (MTCA Method A or B Cleanup Level for Unrestricted Land Use).
- Metals are detected above natural background levels for the Puget Sound region (Ecology, 1994). In the cases of barium, selenium and silver where no natural background level has been established for the Puget Sound, soil are considered "contaminated" if the detected concentrations are greater than the MTCA Method A or B Cleanup Level for Unrestricted Land Use.
- Physical evidence of contamination (sheen, odor, staining) is observed.

3.2. Impacted Soil

Soils are considered "impacted" and should be transported to a controlled and permitted landfill, or owner-approved fill location if:

- Contaminant concentrations for any analyte that exceed laboratory detection limits but are less than regulatory cleanup levels (MTCA Method A or B Cleanup Level for Unrestricted Land Use).
- Metals are detected at or below natural background levels for the Puget Sound region (Ecology, 1994). In the cases of barium, selenium and silver where no natural background level has been established for the Puget Sound, soil is considered "contaminated" if the detected concentrations are greater than the MTCA Method A or B Cleanup Level for Unrestricted Land Use.
- Physical evidence of contamination (sheen, odor, staining) is observed.

3.3. Clean Soil

Soil is considered "clean" and acceptable for unrestricted end-use if:

- Contaminant concentrations are not detected for any analyte other than metals;
- Metals are detected less than the natural background levels for the Puget Sound region (Ecology, 1994). In the cases of barium, selenium and silver where no natural background level has been established for the Puget Sound, soil are considered "clean" if the detected concentrations are less than the MTCA Method A or B Cleanup Level for Unrestricted Land Use.
- Physical evidence of contamination (sheen, odor, staining, etc.) is not observed.

Definitions of contaminant, contaminated soil and natural background concentrations are provided in WAC 173-350-100 for solid waste purposes.

4.0 SOIL EXCAVATION AND HANDLING RECOMMENDATIONS

4.1. Cells A, B, C, D, E, F, H, I, and J – Unrestricted Use

Based on the results of the ROW characterization activities, contaminants of potential concern were not detected in soil samples obtained from Cells A, B, C, D, E, F, H, I, and J or were detected at concentrations that represent background conditions. There are no special handling requirements for this soil.

4.2. Cell G – Restricted Use

Based on the results of the ROW characterization activities, heavy oil-range petroleum hydrocarbons are present in Cell G. Special handling and end use considerations are needed for soil to be excavated within this cell. The special handling and disposal should include the following:

- Material Excavation and Segregation: as the soil in Cell G is excavated, the Contractor should segregate this soil from soil excavated from the remaining cells to prevent mingling of the impacted soil in Cell G and the clean soil (that is not contaminated) excavated from the remaining cells.
- Temporary Stockpiling of Impacted Soil: impacted soil can either be loaded directly into trucks for off-site permitted disposal, or can be stockpiled on the Subject Property pending end use/disposal. If the soil is to be temporarily stockpiled, the impacted soil must be placed on and covered with plastic sheeting at all times.
- Load Transportation: the Contractor should load the segregated impacted material into trucks and transport the material to the selected treatment/disposal facility.
- Disposal/Recycling Facilities: excavated soil can be transported to the selected disposal facility after approval is granted by the facility. Potential disposal/recycling facilities include the following:
    - CEMEX's treatment and disposal facility in Everett, Washington.
    - Republic Services' Roosevelt Landfill located in Klickitat County, Washington. A transfer station for this landfill is located in Seattle, Washington.
    - Waste Management's Columbia Ridge Landfill in Arlington, Oregon. A transfer station for this landfill is located in Seattle, Washington.

  GeoEngineers is available to discuss the benefits and disadvantages of each of these disposal facilities as well as complete the waste profiling for the preferred disposal facility.
- Confirmation Soil Sampling: No confirmation soil sampling from the ROW soil excavation will be necessary unless unexpected contamination is identified.

5.0 DISCOVERY OF UNEXPECTED POTENTIALLY CONTAMINATED/IMPACTED SOIL

GeoEngineers will not be on site to field screen soil during ROW excavation activities. Therefore, it is the Contractor's responsibility to identify potentially contaminated/impacted soil as described below. Excavated soil from any location will be considered to be petroleum-contaminated/impacted if it exhibits one or more of the following physical characteristics:

- Staining;
- Petroleum hydrocarbon odors;
- A moderate or heavy sheen when placed in contact with water; and/or,
- Significant concentrations of organic vapors detected using headspace field screening methods.

If soil exhibits one or more of the above characteristics, the Contractor should notify GeoEngineers and/or Sellen immediately for characterization prior to disposal. A "Potentially Contaminant Impacted Soil Notification Form" is presented in Appendix B. Upon discovery of potentially contaminated/impacted soil, the Contractor should refer to this guide for contact information of people to notify as well as information regarding the location, type and actions taken to address the potentially contaminated soil.

6.0 DISCOVERY OF UNEXPECTED POTENTIALLY CONTAMINATED/IMPACTED GROUNDWATER

Although isolated, localized pockets of perched groundwater may be encountered during utility rerouting activities, groundwater handling is not anticipated to be necessary during utility earthwork activities. GeoEngineers will not be on site evaluate groundwater conditions during ROW excavation activities, therefore, it is the Contractor's responsibility to identify potentially contaminated/impacted groundwater as described below.

- Petroleum hydrocarbon odors;
- A moderate or heavy sheen on the surface of the water; and/or,
- Turbidity that may result in a discharge exceedance.

It is important for the contractor to prepare a groundwater handling plan with appropriate containment and treatment methodologies. The contractor also is responsible for obtaining necessary discharge authorizations from local agencies. GeoEngineers can assist in providing information related to groundwater sampling and testing completed on the subject properties and/or support the contractor in the sampling and testing of groundwater for the presence of hazardous chemicals in order to comply with discharge permits.

7.0 HAZARDOUS MATERIALS MANAGEMENT OF DEMOLISHED UTILITIES

It is the responsibility of the Contractor to subcontract appropriate demolition contractors (as necessary) to remove utilities. We understand that hazardous building materials such as asbestos containing pipes (if present) will be appropriately managed, handled and disposed of by specialty subcontractors.

8.0 CONTACT INFORMATION

If unexpected potentially contaminated soil is discovered during construction activities, the Contractor should notify the people listed on the "Potentially Contaminant Impacted Soil Notification Form" included in Appendix B of this plan. The table below presents those contacts as well as other relevant project contacts who may be contacted as back up.

RELEVANT PROJECT CONTACTS

Name	Title	Cell Phone	Office Phone	Email
Seneca Real Estate Group				
Peter McAuliffe	Development Manager	206.793.0290	206.808.7847	peterm@senecagroup.com
GeoEngineers				
Dave Cook	Environmental Principal	206.372.7637	206.239.3229	dcook@geoengineers.com
Matt Smith	Geotechnical Principal	206.963.0862	425.861.6072	msmith@geoengineers.com
Jessica Smith	Environmental Project Manager	206.423.8289	425.861.6070	jasmith@geoengineers.com
Lindsay Flangas	Geotechnical Project Manager	206.251.6441	425.861.6058	lflangas@geoengineers.com
Jeff Lewis	Pacific Rim Environmental – subconsultant to GeoEngineers for HBM	--	206.244.8965	jlewis@pacrimenv.com
Sellen Construction Company				
Brian Duke	Project Superintendent	206.571.2628	--	brian.duke@sellen.com
Gary Rager	Field Superintendent	206.255.1877	--	gary.rager@sellen.com

9.0 LIMITATIONS

We have prepared this report for the exclusive use of 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.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

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

TABLES

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Table 1

Soil Field Screening and Chemical Analytical Data (Petroleum Hydrocarbons and RCRA 8 Metals)

Rufus 2.0 Redevelopment Block 20 ROW

Block 20 Denny Triangle, Seattle, Washington

GeoEngineers File No. 20434-001-23

Composite Sample ID[1]	Pothole ID	Depth (inches bgs)	Field Screening[2]			Date	Petroleum Hydrocarbons (mg/Kg)[3]			Metals (mg/Kg)[a]							
			Sheen	Odor	PID (ppm)		Gasoline	Diesel	Heavy Oil[3]	Mercury	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver
A	2050	32	NS	NO	0	06/27/14	<24.1	<60.3	<121	<0.280	5.27	159	<0.189	53.5	34.3	<0.473	<0.0946
	2046	36	NS	NO	0	06/27/14											
	2047	40	NS	NO	0	06/27/14											
B	2043	72	NS	NO	0	06/27/14	<20.0	<50.0	<100	<0.266	1.87	51.3	<0.169	24.9	7.58	<0.423	<0.0846
	2044	20	NS	NO	0	06/27/14											
C	2035	29	NS	NO	0	06/27/14	<20.5	<51.1	<102	<0.246	3.97	62.9	<0.179	33.9	5.71	<0.447	<0.0894
	2070	33	NS	NO	0	07/03/14											
	2041	32	NS	NO	0	07/15/14											
D	2032	42	NS	NO	0	07/03/14	<19.1	<47.8	<95.7	<0.263	3.3	90.9	<0.171	30.3	15.3	<0.427	<0.0853
	2027	36	NS	NO	0	07/03/14											
	2024	30	NS	NO	0	07/03/14											
	2032A	33	NS	NO	0	07/03/14											
E	2023	24	NS	NO	0	07/03/14	<20.0	<50.0	<100	<0.274	4.26	73.6	<0.181	40.5	18.9	<0.453	<0.0906
F	2066	36	NS	NO	0	07/03/14	<21.1	<52.6	<105	<0.273	4.58	94.4	<0.195	40	12	<0.487	<0.0974
	2019	36	NS	NO	0	07/11/14											
	2016	20	NS	NO	0	07/11/14											
G	2063	24	NS	NO	0	07/03/14	<20.5	<51.3	**295**	<0.259	5.03	90.1	<0.182	36.3	21.8	<0.455	<0.0911
	2061	24	NS	NO	0	07/11/14											
	2013B	30	NS	NO	0	07/11/14											
H	2007	36	NS	NO	0	07/03/14	<20.9	<52.2	<104	<0.249	2.44	66	<0.184	33	9.6	<0.460	<0.0919
	2006	36	NS	NO	0	07/11/14											
	2010A	36	NS	NO	0	07/11/14											
I	2005	32	NS	NO	0	07/11/14	<20.9	<52.3	<105	<0.259	1.67	55.9	<0.171	36.9	8.11	<0.428	<0.0856
	2004	26	NS	NO	0	07/11/14											
J	2055	24	NS	NO	0	07/11/14	<24.8	<62.0	<124	<0.302	3.92	119	<0.198	50.1	8.74	<0.496	<0.0992
MTCA Method A Cleanup Level for Unrestricted Land Use							100	2000	2000	2	20	16000	2	2,000	250	400	400
Metals Natural Background Concentration							--	--	--	0.07	7	NE	1	42	24	NE	NE

Notes:

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

[2]Field Screening methods are described in Appendix A.

[3]Petroleum hydrocarbon identification analyzed by Northwest Method NWTPH-HCID. Follow-up testing of diesel- and heavy oil-range hydrocarbons was analyzed by Northwest Method NWTPH-Dx.

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

mg/kg = milligrams per kilogram

bgs = below ground surface

NS = no sheen, SS= slight sheen, MS = moderate sheen

-- = not tested

ne = not established

Bolding indicates analyte was detected.

FIGURES

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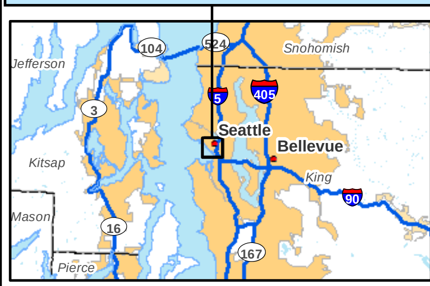

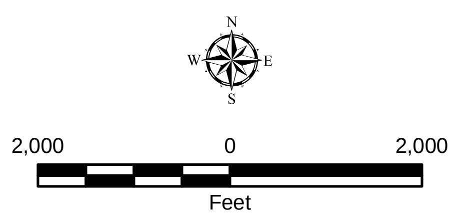

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

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 Development - Block 20
Seattle, Washington

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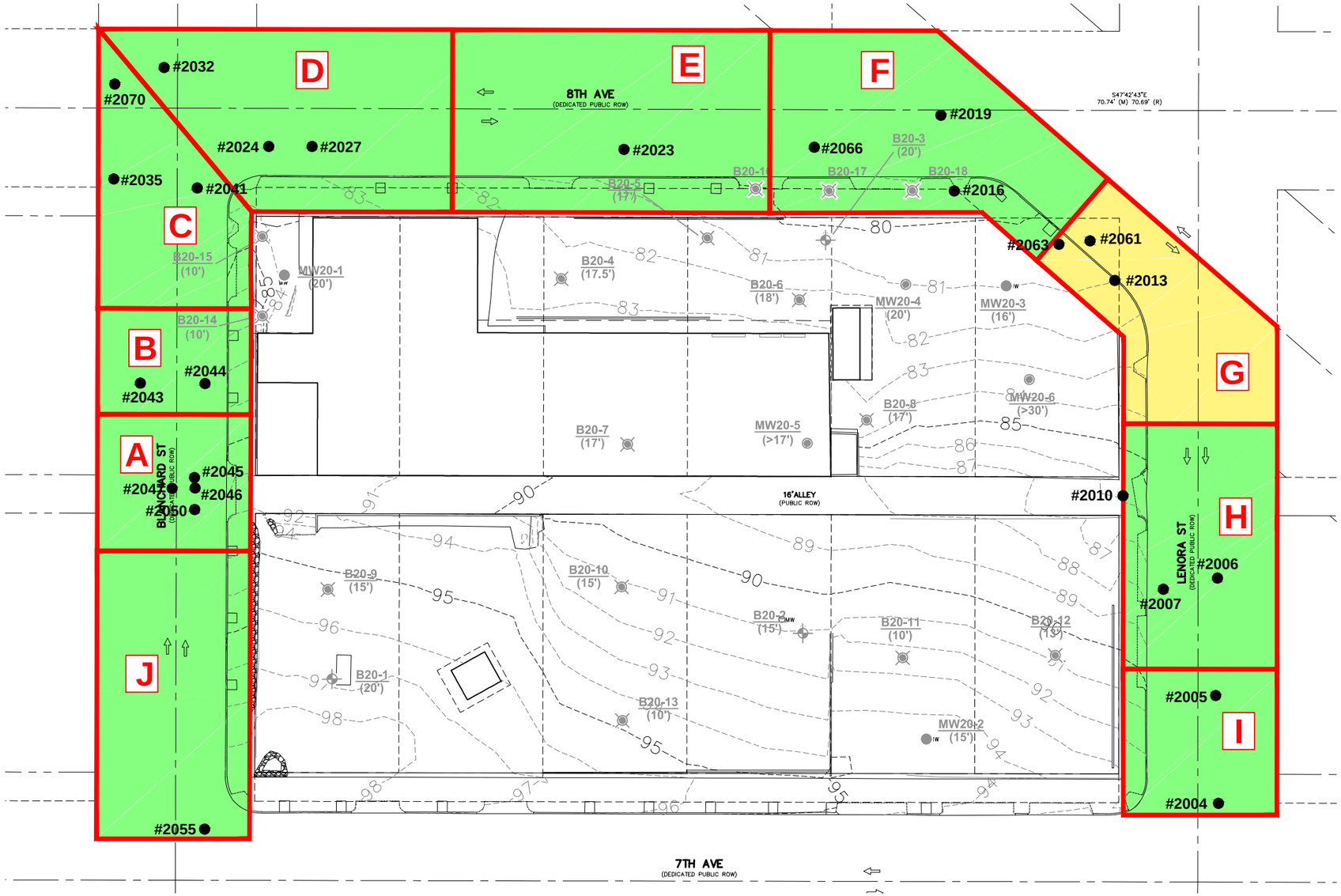
Figure 1

Office: Redmond Path: \\red\projects\20\2043400116_F1_VicinityMap_Block20.mxd Map Revised: May 23, 2013 EL



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.

Legend

MW14-3	Shallow Monitoring Wells Completed in April 2012
B14-6	Direct-Push Borings Completed in April 2012
B14-1	Hollow-stem Auger Borings Completed in February 2012
MW19-1	Monitoring Well Completed in February 2012
TA-B-2	Boring/Monitoring Completed by Others
(2')	Approximate Fill Thickness Observed in the Boring
#2004	Approximate Pothole Locations

A	Soil Characterization Cell
	Contaminants of concern detected at concentrations less than the corresponding MTCA Method A cleanup levels. Soil located in these cells should be transported to an approved permitted soil disposal facility such as Waste Management, Allied Waste or CEMEX.
	Contaminants of concern were not detected. Metals were detected at concentrations similar to natural background concentrations.

50 0 50
FEET

Right of Way
Soil Management Cells

Rufus 2.0 Development
Seattle, Washington

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Figure 2

\\Sea\projects\20\20434001\CAD\23\20434001-23_T100_Fig 2_ROW Soil Characterization.dwg\TAB:Fig 2 Modified by MFORMOLO on Oct 27, 2014 - 13:07

APPENDICES

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APPENDIX A
Field Procedures, Objective and Scope and Background

APPENDIX A
FIELD PROCEDURES

General

Soil conditions were evaluated during potholing activities completed by Applied Professional Services (APS). The purpose of the potholes was to verify the locations of underground utilities. New disposable nitrile gloves were used to obtain each sample. Samples were kept cool during transport to the chemical analytical testing laboratory. Chain-of-custody procedures were observed during transport of the samples to the testing laboratory.

Field Screening of Soil Samples

Soil samples obtained from the explorations were evaluated for evidence of possible contamination using field screening techniques. Field screening results can be used as a general guideline to delineate areas of possible petroleum- or volatile organic compound (VOC)-related contamination in soils. In addition, screening results are often used as a basis for selecting soil samples for chemical analysis. The screening methods employed included: (1) visual examination, (2) water sheen testing, and (3) headspace vapor testing using a photoionization detector (PID).

Visual screening consists of observing 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 when hydrocarbon concentrations are high. Sheen screening is a more sensitive screening method that can be effective in detecting petroleum-based products.

Water sheen testing involves placing soil in water and observing the water surface for signs of sheen. The results of water sheen testing on soil samples from the exploration are presented in Table 1. Sheens are classified 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 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 the PID is inserted into the bag. The PID measures the concentration of photoionizable gases and vapors in the sample bag headspace. The PID is designed to quantify photoionizable gases and vapors up to 2,000 parts per million (ppm), and is calibrated with isobutylene. A lower threshold of significance of 1 ppm is used in application.

Field screening results are site- and exploration-specific. The results may vary with temperature, moisture content, soil lithology, organic content and type of contaminant. The presence or absence of sheen does not necessarily confirm the presence or absence of contaminants in a sample.

OBJECTIVE AND SCOPE OF SERVICES

The objective of the site characterization in the rights of ways was to evaluate the potential for hazardous substances (if any) to be present in soil that will be excavated as part of the utility earthwork activities in the ROWs outside of the Subject Property boundary. Previous environmental studies completed at the Subject Property have documented the presence of contaminants in soil related to historic site use (primarily petroleum hydrocarbons). Based on the presence of contaminants at the Subject Property, soil within the adjacent ROW was also analyzed. Soil samples were obtained from potholes completed by Sellen Construction (Sellen) to confirm the locations and depths of utilities located on Blanchard Street, 8th Avenue, Westlake Avenue, and Lenora Street.

The purpose of our services was to characterize soil (for future disposal purposes) within the ROW adjacent to the Subject Property where vactor truck explorations (potholes) were completed to verify the locations and depths of the utilities. Our scope of services was as follows:

- Obtained discrete soil samples from the potholing activities for field screening, compositing and potential chemical analysis. Select discrete samples obtained in locations where several potholes were completed within a small area were composited by the analytical laboratory. Field activities are described in Appendix A.
- Submitted the discrete or composite soil samples to Fremont Analytical, Inc. in Seattle, Washington for chemical analysis of the following potential contaminants of concern identified:
    - Gasoline-, diesel- and heavy oil-range petroleum hydrocarbons using Northwest Method NWTPH-HCID;
    - Resource Conservation and Recovery Act (RCRA) 8 metals using EPA Methods 6000/7000 Series.

  If petroleum hydrocarbons were detected in the soil samples, the soil samples were submitted for the appropriate follow-up to quantify the detection.
- Evaluated the field screening and chemical analytical results relative to Ecology's Model Toxics Control Act (MTCA) cleanup levels and soil disposal criteria for the Property.

BACKGROUND

Several environmental studies were completed on Block 20 to evaluate potential sources of contamination and to characterize soil and groundwater beneath the subject property. Historic uses of the property are summarized in our Phase I Environmental Site Assessment (ESA) report dated June 7, 2012, the 2012 Phase II ESA activities are summarized in our Phase II ESA report dated June 7, 2012 and the Construction Contingency Plan dated November 3, 2014. The environmental studies completed at the Subject Property have documented the presence of contaminated soil related to historic site use.

Several potential sources of contamination were identified on and adjacent to the Subject Property, including:

- former auto repair facilities (a Toyota dealership currently occupies Block 20),
- former gasoline service stations (a former gasoline station occupied part of Block 20),
- dry cleaners (off-property),

- evidence of former or current USTs (on and off property),
- oil burners (on and off property), and
- undocumented imported fill soil (on and off property).

We understand based on historic research that in the early 1900s, soil was onto the Subject Property from what was formerly Denny Hill during the Denny Hill Cut and Regrade activities. Additionally, it is likely that imported soil from an unknown source was also placed on portions of Block 20.

APPENDIX B
Potentially Contaminant Impacted Soil Notification Form

RUFUS 2.0 REDEVELOPMENT
POTENTIALLY CONTAMINANT IMPACTED SOIL NOTIFICATION FORM

Prepared for: Acorn Development, LLC c/o Seneca Group 1191 Second Avenue, Suite 1500 Seattle, Washington 98101	**GENERAL INFORMATION**	
	DATE OF DISCOVERY:	TIME OF DISCOVERY:
	PERSON DISCOVERING CONDITION:	PHONE NUMBER:
Prepared by: GeoEngineers 600 Stewart Street, Suite 1700 Seattle, WA 98101 206.728.2674	PERSON FILLING OUT FORM:	PHONE NUMBER:
	APPROXIMATE LOCATION OF SOIL ON THE SITE:	

SOIL CHARACTERISTICS

PHYSICAL CHARACTERISTICS:

Odor:
- ☐ Yes (Describe_____)
- ☐ No

Staining:
- ☐ Yes (Describe_____)
- ☐ No

Other: _____

_____

SOIL DISTURBED:
- ☐ Soil in-place
- ☐ Soil stockpiled

FREE LIQUIDS:
- ☐ Yes (Content_____%)
- ☐ No

ACTIONS TAKEN: _____

_____

_____

_____

_____

ESTIMATED VOLUME OF CONTAMINATED SOIL:

NOTIFICATION CONTACT INFORMATION

SENECA	GEOENGINEERS	SELLEN
Todd Leber	Chris Brown	Brian Duke
C: 206.550.5222	D: 425.284.7223	C: 206.571.2628
toddl@senecagroup.com	C: 206.427.7706	brian.duke@sellen.com
	cbrown@geoengineers.com	

ADDITIONAL INFORMATION

This record serves to document information, actions, and notifications regarding the discovery of and response to the presence of suspected and known contamination on the project.

APPENDIX C
Chemical Analytical Program

APPENDIX C
CHEMICAL ANALYTICAL PROGRAM

Samples

Chain-of-custody procedures were followed during the transport of the field samples to the accredited analytical laboratory. The samples were held in cold storage pending extraction and/or analysis. The analytical results and quality control records are included in this appendix.

Analytical Data Review

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 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 reports. Any significant data quality exceptions documented by the accredited laboratory were reviewed by GeoEngineers and are addressed in the data quality exception section of this appendix.

Data Quality Exception Summary

No significant data quality exceptions were noted in the laboratory reports or during our review. Based on the data quality review, it is our opinion that the analytical data are of acceptable quality for their intended use in this report.

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

GeoEngineers
Jessica Smith
600 Stewart Street, Suite 1700
Seattle, WA 98101

RE: Rufus Block 2.0
Lab ID: 1407055

July 11, 2014

Attention Jessica Smith:

Fremont Analytical, Inc. received 13 sample(s) on 7/3/2014 for the analyses presented in the following report.

Hydrocarbon Identification by NWTPH-HCID
Mercury by EPA Method 7471
Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020

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: *07/11/2014*

CLIENT: GeoEngineers
Project: Rufus Block 2.0
Lab Order: 1407055

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1407055-001	2070-33	06/30/2014 2:30 PM	07/03/2014 3:33 PM
1407055-002	2032A-33	06/30/2014 2:35 PM	07/03/2014 3:33 PM
1407055-003	2063-24	07/02/2014 2:30 PM	07/03/2014 3:33 PM
1407055-004	2027-36	07/01/2014 2:30 PM	07/03/2014 3:33 PM
1407055-005	2032-42	07/02/2014 2:35 PM	07/03/2014 3:33 PM
1407055-006	2066-36	07/02/2014 2:37 PM	07/03/2014 3:33 PM
1407055-007	2022-42	07/02/2014 2:40 PM	07/03/2014 3:33 PM
1407055-008	2024-30	07/01/2014 2:35 PM	07/03/2014 3:33 PM
1407055-009	2013-24	07/02/2014 2:45 PM	07/03/2014 3:33 PM
1407055-010	2023-24	07/02/2014 2:50 PM	07/03/2014 3:33 PM
1407055-011	2007-36	07/03/2014 2:40 PM	07/03/2014 3:33 PM
1407055-012	2009-42	07/03/2014 2:45 PM	07/03/2014 3:33 PM
1407055-013	Composite D	07/01/2014 12:00 AM	07/03/2014 3:33 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **1407055**
Date: **7/11/2014**

CLIENT: GeoEngineers
Project: Rufus Block 2.0

I. SAMPLE RECEIPT:
Samples receipt information is 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#: **1407055**
Date Reported: **7/11/2014**

Client: GeoEngineers **Collection Date:** 7/1/2014
Project: Rufus Block 2.0
Lab ID: 1407055-013 **Matrix:** Soil
Client Sample ID: **Composite D**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8043		Analyst: EC
Gasoline	ND	19.1		mg/Kg-dry	1	7/8/2014 9:01:00 PM
Mineral Spirits	ND	28.7		mg/Kg-dry	1	7/8/2014 9:01:00 PM
Kerosene	ND	47.8		mg/Kg-dry	1	7/8/2014 9:01:00 PM
Diesel (Fuel Oil)	ND	47.8		mg/Kg-dry	1	7/8/2014 9:01:00 PM
Heavy Oil	ND	95.7		mg/Kg-dry	1	7/8/2014 9:01:00 PM
Mineral Oil	ND	95.7		mg/Kg-dry	1	7/8/2014 9:01:00 PM
Surr: 2-Fluorobiphenyl	119	50-150		%REC	1	7/8/2014 9:01:00 PM
Surr: o-Terphenyl	113	50-150		%REC	1	7/8/2014 9:01:00 PM
Mercury by EPA Method 7471				Batch ID: 8046		Analyst: MW
Mercury	ND	0.263		mg/Kg-dry	1	7/8/2014 11:25:36 AM
Total Metals by EPA Method 6020				Batch ID: 8045		Analyst: TN
Arsenic	3.30	0.0853		mg/Kg-dry	1	7/8/2014 5:32:13 PM
Barium	90.9	0.427		mg/Kg-dry	1	7/8/2014 5:32:13 PM
Cadmium	ND	0.171		mg/Kg-dry	1	7/8/2014 5:32:13 PM
Chromium	30.3	0.0853		mg/Kg-dry	1	7/8/2014 5:32:13 PM
Lead	15.3	0.171		mg/Kg-dry	1	7/8/2014 5:32:13 PM
Selenium	ND	0.427		mg/Kg-dry	1	7/8/2014 5:32:13 PM
Silver	ND	0.0853		mg/Kg-dry	1	7/8/2014 5:32:13 PM
Sample Moisture (Percent Moisture)				Batch ID: R15449		Analyst: TK
Percent Moisture	8.46			wt%	1	7/8/2014 10:58:17 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

Date: *7/11/2014*

Work Order: 1407055
CLIENT: GeoEngineers
Project: Rufus Block 2.0

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **MB-8045** SampType: **MBLK** Units: **mg/Kg** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **MBLKS** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313207**

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-8045** SampType: **LCS** Units: **mg/Kg** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **LCSS** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313208**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	102	0.100	104.0	0	97.6	69.5	130.8				
Barium	929	0.500	779.0	0	119	74.8	125.3				
Cadmium	92.2	0.200	92.80	0	99.4	73.3	127.2				
Chromium	65.9	0.100	62.90	0	105	67.9	132				
Lead	336	0.200	319.0	0	105	75.9	124.1				
Selenium	85.9	0.500	77.70	0	111	63.1	136.4				
Silver	43.6	0.100	48.50	0	89.8	66.4	133.6				

Sample ID: **1407059-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **BATCH** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313210**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	4.14	0.0889						4.357	5.09	30	
Barium	104	0.444						108.5	4.69	30	
Cadmium	ND	0.178						0		30	
Chromium	42.1	0.0889						204.1	132	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: 1407055
CLIENT: GeoEngineers
Project: Rufus Block 2.0

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1407059-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **BATCH** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313210**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	15.1	0.178						19.28	24.3	30	
Selenium	ND	0.444						0		30	
Silver	ND	0.0889						0		30	

NOTES:
R - High RPD due to suspected sample inhomogeneity. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID: **1407059-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **BATCH** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313212**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	49.7	0.0889	44.43	4.357	102	75	125				
Barium	157	0.444	44.43	108.5	110	75	125				
Cadmium	2.38	0.178	2.221	0.09312	103	75	125				
Chromium	97.0	0.0889	44.43	204.1	-241	75	125				S
Lead	39.4	0.178	22.21	19.28	90.4	75	125				
Selenium	5.35	0.444	4.443	0.1790	116	75	125				
Silver	1.95	0.0889	2.221	0.08042	84.1	75	125				

NOTES:
S - Outlying spike recovery observed. A duplicate analysis was performed with similar results indicating a matrix effect.

Sample ID: **1407059-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **BATCH** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313213**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	50.4	0.0895	44.77	4.357	103	75	125	49.71	1.46	30	
Barium	149	0.448	44.77	108.5	90.8	75	125	157.3	5.29	30	
Cadmium	2.30	0.179	2.238	0.09312	98.4	75	125	2.377	3.46	30	
Chromium	96.0	0.0895	44.77	204.1	-241	75	125	97.04	1.08	30	S
Lead	38.1	0.179	22.38	19.28	84.0	75	125	39.36	3.29	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: *7/11/2014*

Work Order: 1407055
CLIENT: GeoEngineers
Project: Rufus Block 2.0

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1407059-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **BATCH** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313213**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	4.80	0.448	4.477	0.1790	103	75	125	5.349	10.8	30	
Silver	1.81	0.0895	2.238	0.08042	77.2	75	125	1.948	7.46	30	

NOTES:
S - Outlying spike recovery observed. A duplicate analysis was performed with similar results indicating a matrix effect.

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: *7/11/2014*

Work Order: 1407055
CLIENT: GeoEngineers
Project: Rufus Block 2.0

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: **MB-8046**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **7/8/2014**	RunNo: **15451**
Client ID: **MBLKS**	Batch ID: **8046**		Analysis Date: **7/8/2014**	SeqNo: **312910**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-8046**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **7/8/2014**	RunNo: **15451**
Client ID: **LCSS**	Batch ID: **8046**		Analysis Date: **7/8/2014**	SeqNo: **312911**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.498	0.250	0.5000	0	99.6	80	120				

Sample ID: **1407055-013ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **7/8/2014**	RunNo: **15451**
Client ID: **Composite D**	Batch ID: **8046**		Analysis Date: **7/8/2014**	SeqNo: **312913**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.231						0		20	

Sample ID: **1407055-013AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **7/8/2014**	RunNo: **15451**
Client ID: **Composite D**	Batch ID: **8046**		Analysis Date: **7/8/2014**	SeqNo: **312914**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.550	0.258	0.5153	0.02626	102	70	130				

Sample ID: **1407055-013AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **7/8/2014**	RunNo: **15451**
Client ID: **Composite D**	Batch ID: **8046**		Analysis Date: **7/8/2014**	SeqNo: **312915**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.568	0.268	0.5355	0.02626	101	70	130	0.5504	3.09	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: *7/11/2014*

Work Order: 1407055
CLIENT: GeoEngineers
Project: Rufus Block 2.0

QC SUMMARY REPORT

Hydrocarbon Identification by NWTPH-HCID

Sample ID: **LCS8043**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **7/8/2014**	RunNo: **15476**
Client ID: **LCSS**	Batch ID: **8043**		Analysis Date: **7/8/2014**	SeqNo: **313293**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	534	50.0	500.0	0	107	65	135				
Surr: 2-Fluorobiphenyl	26.4		20.00		132	50	150				
Surr: o-Terphenyl	24.5		20.00		123	50	150				

Sample ID: **MBLK8043**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **7/8/2014**	RunNo: **15476**
Client ID: **MBLKS**	Batch ID: **8043**		Analysis Date: **7/8/2014**	SeqNo: **313294**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	20.0									
Mineral Spirits	ND	30.0									
Kerosene	ND	50.0									
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Mineral Oil	ND	100									
Surr: 2-Fluorobiphenyl	23.7		20.00		118	50	150				
Surr: o-Terphenyl	22.6		20.00		113	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

Sample Log-In Check List

Client Name:	**GEI**	Work Order Number:	**1407055**
Logged by:	**Clare Griggs**	Date Received:	**7/3/2014 3:33:00 PM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Coolers are present?	Yes ☑	No ☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Required ☑
6.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
7.	Were all coolers received at a temperature of >0°C to 10.0°C	Yes ☑	No ☐	NA ☐
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is the headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18.	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:			

19. Additional remarks:

Item Information

Item #	Temp ºC	Condition
Cooler	4.2	Good
Sample	9.4	Good

Fremont Analytical

Chain of Custody Record

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): 1407055

Date: 7/3/2014

Page: 1 of: 2

Client: GeoEngineers
Address: 600 Stewart St Suite 1700
City, State, Zip: Seattle WA 98101
Tel: 206-423-8289
Reports To (PM): Jessica Smith
Fax:

Project Name: Rubus Block 20
Location: Seattle
Collected by: Claudia De La Vega
Email: jasmith@geoengineers.com
Project No: 20434-001-23

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SEMI VOC (EPA 8270 - SIM)	PAH (EPA 8270)	PCBs (EPA 8082)	Metals** (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)***	EDB (8011)	Comments/Depth
1	2070-33	6/30	1430	S														
2	2032A-33	6/30	1435															
3	2063-24	7/2	1430															Jessica Smith to determine
4	2027-36	7/1	1430					D					D					Composite D
5	2032-42	7/2	1435					D					D					Analyte pattern
6	2066-36	7/2	1437															
7	2022-42	7/2	1440															
8	2024-30	7/1	1435					D					D					Composite D
9	2013-24	7/2	1445															
10	2023-24	7/2	1450	↓														

**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		x	
Relinquished	Date/Time	Received	Date/Time
x		x	

Special Remarks:

TAT -> SameDay^ NextDay^ 2 Day 3 Day (STD)

^Please coordinate with the lab in advance

Fremont Analytical

Chain of Custody Record

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): _____

Date: 7/3/14 Page 2 of 2

Client: GeoEngineers
Address:
City, State, Zip
Tel:
Reports To (PM): Jessica Smith
Fax:

Project Name: Rubus Block 20
Location:
Collected by: Claudia De La Vita
Email: jasmith@geoengineers.com
Project No: 20434-001-23

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SIM VOC (EPA 8270 - SIM)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Metals**	Total (T) / Dissolved (D)	Anions (EPA)***	EDB (8011)	Comments/Depth
1 2007-36	7/3	1440	S														Jessica to determine composite + analytical pattern
2 2009-42	7/3	1445	S														
3																	
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

Special Remarks:

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		x	
Relinquished	Date/Time	Received	Date/Time
x		x	

TAT -> SameDay^ NextDay^ 2 Day 3 Day (STD)

^Please coordinate with the lab in advance

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

GeoEngineers
Jessica Smith
600 Stewart Street, Suite 1700
Seattle, WA 98101

RE: Rufus Block 20
Lab ID: 1407057

July 11, 2014

Attention Jessica Smith:

Fremont Analytical, Inc. received 19 sample(s) on 6/27/2014 for the analyses presented in the following report.

Hydrocarbon Identification by NWTPH-HCID
Mercury by EPA Method 7471
Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020

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: *07/11/2014*

CLIENT: GeoEngineers
Project: Rufus Block 20
Lab Order: 1407057

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1407057-001	2044-20	06/25/2014 2:40 PM	06/27/2014 3:17 PM
1407057-002	2047-40	06/25/2014 2:35 PM	06/27/2014 3:17 PM
1407057-003	2052-26	06/25/2014 2:30 PM	06/27/2014 3:17 PM
1407057-004	2046-36	06/24/2014 2:40 PM	06/27/2014 3:17 PM
1407057-005	2052-24	06/24/2014 2:35 PM	06/27/2014 3:17 PM
1407057-006	2045-36	06/23/2014 2:45 PM	06/27/2014 3:17 PM
1407057-007	2050-32	06/23/2014 2:40 PM	06/27/2014 3:17 PM
1407057-008	2035-29	06/23/2014 2:37 PM	06/27/2014 3:17 PM
1407057-009	2035-57	06/23/2014 2:35 PM	06/27/2014 3:17 PM
1407057-010	2043-72	06/23/2014 2:30 PM	06/27/2014 3:17 PM
1407057-011	2071-32	06/26/2014 2:30 PM	06/27/2014 3:17 PM
1407057-012	2069-32	06/26/2014 2:35 PM	06/27/2014 3:17 PM
1407057-013	2030-33	06/26/2014 2:40 PM	06/27/2014 3:17 PM
1407057-014	2071B-32	06/27/2014 2:30 PM	06/27/2014 3:17 PM
1407057-015	2071-33	06/27/2014 2:35 PM	06/27/2014 3:17 PM
1407057-016	2038-32	06/27/2014 2:37 PM	06/27/2014 3:17 PM
1407057-017	2043A-36	06/27/2014 2:40 PM	06/27/2014 3:17 PM
1407057-018	Composite A	06/25/2014 12:00 AM	06/27/2014 3:17 PM
1407057-019	Composite B	06/25/2014 12:00 AM	06/27/2014 3:17 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **1407057**
Date: **7/11/2014**

CLIENT: GeoEngineers
Project: Rufus Block 20

I. SAMPLE RECEIPT:
Samples receipt information is 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#: **1407057**
Date Reported: **7/11/2014**

Client: GeoEngineers
Collection Date: 6/25/2014
Project: Rufus Block 20
Lab ID: 1407057-018
Matrix: Soil
Client Sample ID: **Composite A**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8043		Analyst: EC
Gasoline	ND	24.1		mg/Kg-dry	1	7/8/2014 10:04:00 PM
Mineral Spirits	ND	36.2		mg/Kg-dry	1	7/8/2014 10:04:00 PM
Kerosene	ND	60.3		mg/Kg-dry	1	7/8/2014 10:04:00 PM
Diesel (Fuel Oil)	ND	60.3		mg/Kg-dry	1	7/8/2014 10:04:00 PM
Heavy Oil	ND	121		mg/Kg-dry	1	7/8/2014 10:04:00 PM
Mineral Oil	ND	121		mg/Kg-dry	1	7/8/2014 10:04:00 PM
Surr: 2-Fluorobiphenyl	124	50-150		%REC	1	7/8/2014 10:04:00 PM
Surr: o-Terphenyl	117	50-150		%REC	1	7/8/2014 10:04:00 PM
Mercury by EPA Method 7471				Batch ID: 8046		Analyst: MW
Mercury	ND	0.280		mg/Kg-dry	1	7/8/2014 11:32:06 AM
Total Metals by EPA Method 6020				Batch ID: 8045		Analyst: TN
Arsenic	5.27	0.0946		mg/Kg-dry	1	7/8/2014 5:35:39 PM
Barium	159	0.473		mg/Kg-dry	1	7/8/2014 5:35:39 PM
Cadmium	ND	0.189		mg/Kg-dry	1	7/8/2014 5:35:39 PM
Chromium	53.5	0.0946		mg/Kg-dry	1	7/8/2014 5:35:39 PM
Lead	34.3	0.189		mg/Kg-dry	1	7/8/2014 5:35:39 PM
Selenium	ND	0.473		mg/Kg-dry	1	7/8/2014 5:35:39 PM
Silver	ND	0.0946		mg/Kg-dry	1	7/8/2014 5:35:39 PM
Sample Moisture (Percent Moisture)				Batch ID: R15449		Analyst: TK
Percent Moisture	18.7			wt%	1	7/8/2014 10:58:17 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#: **1407057**
Date Reported: **7/11/2014**

Client: GeoEngineers **Collection Date:** 6/25/2014
Project: Rufus Block 20
Lab ID: 1407057-019 **Matrix:** Soil
Client Sample ID: **Composite B**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8043		Analyst: EC
Gasoline	ND	20.0		mg/Kg-dry	1	7/8/2014 10:36:00 PM
Mineral Spirits	ND	30.0		mg/Kg-dry	1	7/8/2014 10:36:00 PM
Kerosene	ND	50.0		mg/Kg-dry	1	7/8/2014 10:36:00 PM
Diesel (Fuel Oil)	ND	50.0		mg/Kg-dry	1	7/8/2014 10:36:00 PM
Heavy Oil	ND	100		mg/Kg-dry	1	7/8/2014 10:36:00 PM
Mineral Oil	ND	100		mg/Kg-dry	1	7/8/2014 10:36:00 PM
Surr: 2-Fluorobiphenyl	127	50-150		%REC	1	7/8/2014 10:36:00 PM
Surr: o-Terphenyl	120	50-150		%REC	1	7/8/2014 10:36:00 PM
Mercury by EPA Method 7471				Batch ID: 8046		Analyst: MW
Mercury	ND	0.266		mg/Kg-dry	1	7/8/2014 11:33:41 AM
Total Metals by EPA Method 6020				Batch ID: 8045		Analyst: TN
Arsenic	1.87	0.0846		mg/Kg-dry	1	7/8/2014 5:39:05 PM
Barium	51.3	0.423		mg/Kg-dry	1	7/8/2014 5:39:05 PM
Cadmium	ND	0.169		mg/Kg-dry	1	7/8/2014 5:39:05 PM
Chromium	24.9	0.0846		mg/Kg-dry	1	7/8/2014 5:39:05 PM
Lead	7.58	0.169		mg/Kg-dry	1	7/8/2014 5:39:05 PM
Selenium	ND	0.423		mg/Kg-dry	1	7/8/2014 5:39:05 PM
Silver	ND	0.0846		mg/Kg-dry	1	7/8/2014 5:39:05 PM
Sample Moisture (Percent Moisture)				Batch ID: R15449		Analyst: TK
Percent Moisture	9.75			wt%	1	7/8/2014 10:58:17 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

Date: *7/11/2014*

Work Order: 1407057
CLIENT: GeoEngineers
Project: Rufus Block 20

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **MB-8045** SampType: **MBLK** Units: **mg/Kg** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **MBLKS** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313207**

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-8045** SampType: **LCS** Units: **mg/Kg** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **LCSS** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313208**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	102	0.100	104.0	0	97.6	69.5	130.8				
Barium	929	0.500	779.0	0	119	74.8	125.3				
Cadmium	92.2	0.200	92.80	0	99.4	73.3	127.2				
Chromium	65.9	0.100	62.90	0	105	67.9	132				
Lead	336	0.200	319.0	0	105	75.9	124.1				
Selenium	85.9	0.500	77.70	0	111	63.1	136.4				
Silver	43.6	0.100	48.50	0	89.8	66.4	133.6				

Sample ID: **1407059-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **BATCH** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313210**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	4.14	0.0889						4.357	5.09	30	
Barium	104	0.444						108.5	4.69	30	
Cadmium	ND	0.178						0		30	
Chromium	42.1	0.0889						204.1	132	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: 1407057
CLIENT: GeoEngineers
Project: Rufus Block 20

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1407059-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **BATCH** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313210**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	15.1	0.178						19.28	24.3	30	
Selenium	ND	0.444						0		30	
Silver	ND	0.0889						0		30	

NOTES:
R - High RPD due to suspected sample inhomogeneity. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID: **1407059-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **BATCH** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313212**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	49.7	0.0889	44.43	4.357	102	75	125				
Barium	157	0.444	44.43	108.5	110	75	125				
Cadmium	2.38	0.178	2.221	0.09312	103	75	125				
Chromium	97.0	0.0889	44.43	204.1	-241	75	125				S
Lead	39.4	0.178	22.21	19.28	90.4	75	125				
Selenium	5.35	0.444	4.443	0.1790	116	75	125				
Silver	1.95	0.0889	2.221	0.08042	84.1	75	125				

NOTES:
S - Outlying spike recovery observed. A duplicate analysis was performed with similar results indicating a matrix effect.

Sample ID: **1407059-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **BATCH** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313213**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	50.4	0.0895	44.77	4.357	103	75	125	49.71	1.46	30	
Barium	149	0.448	44.77	108.5	90.8	75	125	157.3	5.29	30	
Cadmium	2.30	0.179	2.238	0.09312	98.4	75	125	2.377	3.46	30	
Chromium	96.0	0.0895	44.77	204.1	-241	75	125	97.04	1.08	30	S
Lead	38.1	0.179	22.38	19.28	84.0	75	125	39.36	3.29	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: *7/11/2014*

Work Order: 1407057
CLIENT: GeoEngineers
Project: Rufus Block 20

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1407059-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **7/8/2014** RunNo: **15472**
Client ID: **BATCH** Batch ID: **8045** Analysis Date: **7/8/2014** SeqNo: **313213**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	4.80	0.448	4.477	0.1790	103	75	125	5.349	10.8	30	
Silver	1.81	0.0895	2.238	0.08042	77.2	75	125	1.948	7.46	30	

NOTES:
S - Outlying spike recovery observed. A duplicate analysis was performed with similar results indicating a matrix effect.

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: *7/11/2014*

Work Order: 1407057
CLIENT: GeoEngineers
Project: Rufus Block 20

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: **MB-8046**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **7/8/2014**	RunNo: **15451**
Client ID: **MBLKS**	Batch ID: **8046**		Analysis Date: **7/8/2014**	SeqNo: **312910**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-8046**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **7/8/2014**	RunNo: **15451**
Client ID: **LCSS**	Batch ID: **8046**		Analysis Date: **7/8/2014**	SeqNo: **312911**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.498	0.250	0.5000	0	99.6	80	120				

Sample ID: **1407055-013ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **7/8/2014**	RunNo: **15451**
Client ID: **BATCH**	Batch ID: **8046**		Analysis Date: **7/8/2014**	SeqNo: **312913**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.231						0		20	

Sample ID: **1407055-013AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **7/8/2014**	RunNo: **15451**
Client ID: **BATCH**	Batch ID: **8046**		Analysis Date: **7/8/2014**	SeqNo: **312914**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.550	0.258	0.5153	0.02626	102	70	130				

Sample ID: **1407055-013AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **7/8/2014**	RunNo: **15451**
Client ID: **BATCH**	Batch ID: **8046**		Analysis Date: **7/8/2014**	SeqNo: **312915**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.568	0.268	0.5355	0.02626	101	70	130	0.5504	3.09	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: *7/11/2014*

Work Order: 1407057
CLIENT: GeoEngineers
Project: Rufus Block 20

QC SUMMARY REPORT

Hydrocarbon Identification by NWTPH-HCID

Sample ID: **LCS8043**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **7/8/2014**	RunNo: **15476**
Client ID: **LCSS**	Batch ID: **8043**		Analysis Date: **7/8/2014**	SeqNo: **313293**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	534	50.0	500.0	0	107	65	135				
Surr: 2-Fluorobiphenyl	26.4		20.00		132	50	150				
Surr: o-Terphenyl	24.5		20.00		123	50	150				

Sample ID: **MBLK8043**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **7/8/2014**	RunNo: **15476**
Client ID: **MBLKS**	Batch ID: **8043**		Analysis Date: **7/8/2014**	SeqNo: **313294**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	20.0									
Mineral Spirits	ND	30.0									
Kerosene	ND	50.0									
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Mineral Oil	ND	100									
Surr: 2-Fluorobiphenyl	23.7		20.00		118	50	150				
Surr: o-Terphenyl	22.6		20.00		113	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

Sample Log-In Check List

Client Name:	**GEI**	Work Order Number:	**1407057**
Logged by:	**Clare Griggs**	Date Received:	**6/27/2014 3:17:00 PM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Coolers are present?	Yes ☑	No ☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Required ☑
6.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
7.	Were all coolers received at a temperature of >0°C to 10.0°C	Yes ☑	No ☐	NA ☐
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is the headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18.	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:			

19. Additional remarks:

Sample 2038-32 (according to COC) was labeled as 2038-33 on sample label.

Item Information

Item #	Temp ºC	Condition
Cooler	4.2	Good
Sample	9.4	Good

Fremont Analytical

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record

Laboratory Project No (internal): 1407057

Date: 6/27/14
Page: 1 of: 2

Client: [illegible]
Address: [illegible] 1900
City, State, Zip: Seattle, WA 9512[illegible]
Tel: 206-4[illegible]
Reports To (PM): Jessica Smith
Fax:
Email: [illegible]

Project Name: [illegible]
Location: Seattle
Collected by: [illegible]
Project No: 2043-[illegible]

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 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 2044-20	6/25	1420	SO					B							B					"Composite B"
2 2047-40	6/25	1135						A							A					"Composite A"
3 2052-26	6/25	1130																		
4 2046-36	6/24	1440						A							A					Composite A
5 2052-24	6/24	1455																		
6 2045-36	6/23	1445																		
7 2050-32	6/23	1400						A							A					Composite A
8 2035-29	6/23	1130																		
9 2035-57	6/23	1035																		
10 2043-72	6/23	1150	↓					B							B					Composite B

*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]	6/27/14 1317	x [signature]	6/27 15 37
x		x	

TAT--> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

www.fremontanalytical.com

Fremont Analytical

3600 Fremont Ave N.
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record

Laboratory Project No (internal): ______

Date: 6/22/14

Page: 2 of: 2

Client: ______

Address: ______

City, State, Zip ______ Tel: ______

Reports To (PM): [illegible] Fax: ______

Project Name: ______

Location: ______

Collected by ______

Email: [illegible]

Project No: [illegible]-001-7

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Metals** (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)***	EDB (8011)	Comments/Depth
1	2271-32	6/20	1420	[illegible]														[illegible]
2	224-32	6/21	1435															[illegible]
3	2120-23	6/21	1410															[illegible]
4	[illegible]-32	6/22	1421															[illegible]
5	2271-23	6/22	1435															
6	2-28-32	6/22	1423															
7	20-13A-36	6/22	1440															
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

Special Remarks:

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 [signature]	6/22/14 1:17	x [signature]	6/27 15 17
x		x	

TAT -> SameDay^ NextDay^ 2 Day 3 Day STD

^Please coordinate with the lab in advance

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

GeoEngineers
Jessica Smith
600 Stewart Street, Suite 1700
Seattle, WA 98101

RE: Rufus Block 20 Composite
Lab ID: 1407184

July 25, 2014

Attention Jessica Smith:

Fremont Analytical, Inc. received 7 sample(s) on 7/18/2014 for the analyses presented in the following report.

Hydrocarbon Identification by NWTPH-HCID
Mercury by EPA Method 7471
Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020

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: *07/25/2014*

CLIENT: GeoEngineers
Project: Rufus Block 20 Composite
Lab Order: 1407184

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1407184-001	Composite C	06/23/2014 2:35 PM	07/18/2014 12:00 AM
1407184-002	Composite E	07/02/2014 2:50 PM	07/18/2014 12:00 AM
1407184-003	Composite F	07/02/2014 2:37 PM	07/18/2014 12:00 AM
1407184-004	Composite G	07/02/2014 2:30 PM	07/18/2014 12:00 AM
1407184-005	Composite H	07/03/2014 2:40 PM	07/18/2014 12:00 AM
1407184-006	Composite I	07/07/2014 2:40 PM	07/18/2014 12:00 AM
1407184-007	Composite J	07/08/2014 2:00 PM	07/18/2014 12:00 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **1407184**
Date: **7/25/2014**

CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

I. SAMPLE RECEIPT:
Samples receipt information is 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#: **1407184**
Date Reported: **7/25/2014**

Client: GeoEngineers
Collection Date: 6/23/2014 2:35:00 PM
Project: Rufus Block 20 Composite
Lab ID: 1407184-001
Matrix: Soil
Client Sample ID: **Composite C**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	20.5	H	mg/Kg-dry	1	7/22/2014 3:38:00 AM
Mineral Spirits	ND	30.7	H	mg/Kg-dry	1	7/22/2014 3:38:00 AM
Kerosene	ND	51.1	H	mg/Kg-dry	1	7/22/2014 3:38:00 AM
Diesel (Fuel Oil)	ND	51.1	H	mg/Kg-dry	1	7/22/2014 3:38:00 AM
Heavy Oil	ND	102	H	mg/Kg-dry	1	7/22/2014 3:38:00 AM
Mineral Oil	ND	102	H	mg/Kg-dry	1	7/22/2014 3:38:00 AM
Surr: 2-Fluorobiphenyl	99.1	50-150	H	%REC	1	7/22/2014 3:38:00 AM
Surr: o-Terphenyl	94.4	50-150	H	%REC	1	7/22/2014 3:38:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.246		mg/Kg-dry	1	7/21/2014 3:09:08 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	3.97	0.0894		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Barium	62.9	0.447		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Cadmium	ND	0.179		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Chromium	33.9	0.0894		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Lead	5.71	0.179		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Selenium	ND	0.447		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Silver	ND	0.0894		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	13.9			wt%	1	7/21/2014 10:58:55 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#: **1407184**
Date Reported: **7/25/2014**

Client: GeoEngineers
Collection Date: 7/2/2014 2:50:00 PM
Project: Rufus Block 20 Composite
Lab ID: 1407184-002
Matrix: Soil
Client Sample ID: **Composite E**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	20.0	H	mg/Kg-dry	1	7/22/2014 4:40:00 AM
Mineral Spirits	ND	30.0	H	mg/Kg-dry	1	7/22/2014 4:40:00 AM
Kerosene	ND	50.0	H	mg/Kg-dry	1	7/22/2014 4:40:00 AM
Diesel (Fuel Oil)	ND	50.0	H	mg/Kg-dry	1	7/22/2014 4:40:00 AM
Heavy Oil	ND	100	H	mg/Kg-dry	1	7/22/2014 4:40:00 AM
Mineral Oil	ND	100	H	mg/Kg-dry	1	7/22/2014 4:40:00 AM
Surr: 2-Fluorobiphenyl	102	50-150	H	%REC	1	7/22/2014 4:40:00 AM
Surr: o-Terphenyl	96.7	50-150	H	%REC	1	7/22/2014 4:40:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.274		mg/Kg-dry	1	7/21/2014 3:15:38 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	4.26	0.0906		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Barium	73.6	0.453		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Cadmium	ND	0.181		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Chromium	40.5	0.0906		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Lead	18.9	0.181		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Selenium	ND	0.453		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Silver	ND	0.0906		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	13.8			wt%	1	7/21/2014 10:58:55 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#: **1407184**
Date Reported: **7/25/2014**

Client: GeoEngineers
Collection Date: 7/2/2014 2:37:00 PM
Project: Rufus Block 20 Composite
Lab ID: 1407184-003
Matrix: Soil
Client Sample ID: **Composite F**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	21.1	H	mg/Kg-dry	1	7/22/2014 5:11:00 AM
Mineral Spirits	ND	31.6	H	mg/Kg-dry	1	7/22/2014 5:11:00 AM
Kerosene	ND	52.6	H	mg/Kg-dry	1	7/22/2014 5:11:00 AM
Diesel (Fuel Oil)	ND	52.6	H	mg/Kg-dry	1	7/22/2014 5:11:00 AM
Heavy Oil	ND	105	H	mg/Kg-dry	1	7/22/2014 5:11:00 AM
Mineral Oil	ND	105	H	mg/Kg-dry	1	7/22/2014 5:11:00 AM
Surr: 2-Fluorobiphenyl	98.9	50-150	H	%REC	1	7/22/2014 5:11:00 AM
Surr: o-Terphenyl	94.1	50-150	H	%REC	1	7/22/2014 5:11:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.273		mg/Kg-dry	1	7/21/2014 3:17:13 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	4.58	0.0974		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Barium	94.4	0.487		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Cadmium	ND	0.195		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Chromium	40.0	0.0974		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Lead	12.0	0.195		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Selenium	ND	0.487		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Silver	ND	0.0974		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	19.8			wt%	1	7/21/2014 10:58:55 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#: **1407184**
Date Reported: **7/25/2014**

Client: GeoEngineers
Collection Date: 7/2/2014 2:30:00 PM
Project: Rufus Block 20 Composite
Lab ID: 1407184-004
Matrix: Soil
Client Sample ID: **Composite G**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	20.5	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Mineral Spirits	ND	30.8	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Kerosene	ND	51.3	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Diesel (Fuel Oil)	ND	51.3	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Heavy Oil	DETECT	103	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Mineral Oil	ND	103	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Surr: 2-Fluorobiphenyl	99.0	50-150	H	%REC	1	7/22/2014 5:42:00 AM
Surr: o-Terphenyl	96.6	50-150	H	%REC	1	7/22/2014 5:42:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.259		mg/Kg-dry	1	7/21/2014 3:18:49 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	5.03	0.0911		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Barium	90.1	0.455		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Cadmium	ND	0.182		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Chromium	36.3	0.0911		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Lead	21.8	0.182		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Selenium	ND	0.455		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Silver	ND	0.0911		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	16.8			wt%	1	7/21/2014 10:58:55 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#: **1407184**
Date Reported: **7/25/2014**

Client: GeoEngineers
Collection Date: 7/3/2014 2:40:00 PM
Project: Rufus Block 20 Composite
Lab ID: 1407184-005
Matrix: Soil
Client Sample ID: **Composite H**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	20.9	H	mg/Kg-dry	1	7/22/2014 6:13:00 AM
Mineral Spirits	ND	31.3	H	mg/Kg-dry	1	7/22/2014 6:13:00 AM
Kerosene	ND	52.2	H	mg/Kg-dry	1	7/22/2014 6:13:00 AM
Diesel (Fuel Oil)	ND	52.2	H	mg/Kg-dry	1	7/22/2014 6:13:00 AM
Heavy Oil	ND	104	H	mg/Kg-dry	1	7/22/2014 6:13:00 AM
Mineral Oil	ND	104	H	mg/Kg-dry	1	7/22/2014 6:13:00 AM
Surr: 2-Fluorobiphenyl	100	50-150	H	%REC	1	7/22/2014 6:13:00 AM
Surr: o-Terphenyl	96.6	50-150	H	%REC	1	7/22/2014 6:13:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.249		mg/Kg-dry	1	7/21/2014 3:20:25 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	2.44	0.0919		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Barium	66.0	0.460		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Cadmium	ND	0.184		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Chromium	33.0	0.0919		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Lead	9.60	0.184		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Selenium	ND	0.460		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Silver	ND	0.0919		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	16.3			wt%	1	7/21/2014 10:58:55 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#: **1407184**
Date Reported: **7/25/2014**

Client: GeoEngineers
Collection Date: 7/7/2014 2:40:00 PM
Project: Rufus Block 20 Composite
Lab ID: 1407184-006
Matrix: Soil
Client Sample ID: **Composite I**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	20.9		mg/Kg-dry	1	7/22/2014 6:44:00 AM
Mineral Spirits	ND	31.4		mg/Kg-dry	1	7/22/2014 6:44:00 AM
Kerosene	ND	52.3		mg/Kg-dry	1	7/22/2014 6:44:00 AM
Diesel (Fuel Oil)	ND	52.3		mg/Kg-dry	1	7/22/2014 6:44:00 AM
Heavy Oil	ND	105		mg/Kg-dry	1	7/22/2014 6:44:00 AM
Mineral Oil	ND	105		mg/Kg-dry	1	7/22/2014 6:44:00 AM
Surr: 2-Fluorobiphenyl	100	50-150		%REC	1	7/22/2014 6:44:00 AM
Surr: o-Terphenyl	96.4	50-150		%REC	1	7/22/2014 6:44:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.259		mg/Kg-dry	1	7/21/2014 3:25:16 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	1.67	0.0856		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Barium	55.9	0.428		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Cadmium	ND	0.171		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Chromium	36.9	0.0856		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Lead	8.11	0.171		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Selenium	ND	0.428		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Silver	ND	0.0856		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	12.1			wt%	1	7/21/2014 10:58:55 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#: **1407184**
Date Reported: **7/25/2014**

Client: GeoEngineers
Collection Date: 7/8/2014 2:00:00 PM
Project: Rufus Block 20 Composite
Lab ID: 1407184-007
Matrix: Soil
Client Sample ID: **Composite J**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	24.8		mg/Kg-dry	1	7/22/2014 7:15:00 AM
Mineral Spirits	ND	37.2		mg/Kg-dry	1	7/22/2014 7:15:00 AM
Kerosene	ND	62.0		mg/Kg-dry	1	7/22/2014 7:15:00 AM
Diesel (Fuel Oil)	ND	62.0		mg/Kg-dry	1	7/22/2014 7:15:00 AM
Heavy Oil	ND	124		mg/Kg-dry	1	7/22/2014 7:15:00 AM
Mineral Oil	ND	124		mg/Kg-dry	1	7/22/2014 7:15:00 AM
Surr: 2-Fluorobiphenyl	99.3	50-150		%REC	1	7/22/2014 7:15:00 AM
Surr: o-Terphenyl	95.6	50-150		%REC	1	7/22/2014 7:15:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.302		mg/Kg-dry	1	7/21/2014 3:26:53 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	3.92	0.0992		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Barium	119	0.496		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Cadmium	ND	0.198		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Chromium	50.1	0.0992		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Lead	8.74	0.198		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Selenium	ND	0.496		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Silver	ND	0.0992		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	24.8			wt%	1	7/21/2014 10:58:55 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: 1407184
CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **MB-8156** SampType: **MBLK** Units: **mg/Kg** Prep Date: **7/21/2014** RunNo: **15695**
Client ID: **MBLKS** Batch ID: **8156** Analysis Date: **7/21/2014** SeqNo: **317631**

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-8156** SampType: **LCS** Units: **mg/Kg** Prep Date: **7/21/2014** RunNo: **15695**
Client ID: **LCSS** Batch ID: **8156** Analysis Date: **7/21/2014** SeqNo: **317632**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	97.0	0.100	104.0	0	93.2	69.5	130.8				
Barium	757	0.500	779.0	0	97.2	74.8	125.3				
Cadmium	92.2	0.200	92.80	0	99.3	73.3	127.2				
Chromium	67.1	0.100	62.90	0	107	67.9	132				
Lead	309	0.200	319.0	0	96.8	75.9	124.1				
Selenium	72.0	0.500	77.70	0	92.6	63.1	136.4				
Silver	44.7	0.100	48.50	0	92.1	66.4	133.6				

Sample ID: **1407175-003ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/21/2014** RunNo: **15695**
Client ID: **BATCH** Batch ID: **8156** Analysis Date: **7/21/2014** SeqNo: **317634**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	2.18	0.0831						2.340	7.06	30	
Barium	35.6	0.416						38.26	7.31	30	
Cadmium	ND	0.166						0		30	
Chromium	21.1	0.0831						20.80	1.58	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: 1407184
CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1407175-003ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/21/2014** RunNo: **15695**
Client ID: **BATCH** Batch ID: **8156** Analysis Date: **7/21/2014** SeqNo: **317634**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.42	0.166						1.423	0.0175	30	
Selenium	ND	0.416						0		30	
Silver	ND	0.0831						0		30	

Sample ID: **1407175-003AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/21/2014** RunNo: **15695**
Client ID: **BATCH** Batch ID: **8156** Analysis Date: **7/21/2014** SeqNo: **317638**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.7	0.0837	41.87	2.340	106	75	125				
Barium	82.5	0.419	41.87	38.26	106	75	125				
Cadmium	2.21	0.167	2.094	0.03943	104	75	125				
Chromium	71.5	0.0837	41.87	20.80	121	75	125				
Lead	22.8	0.167	20.94	1.423	102	75	125				
Selenium	4.20	0.419	4.187	0	100	75	125				
Silver	1.91	0.0837	2.094	0.01712	90.5	75	125				

Sample ID: **1407175-003AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **7/21/2014** RunNo: **15695**
Client ID: **BATCH** Batch ID: **8156** Analysis Date: **7/21/2014** SeqNo: **317639**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	42.7	0.0818	40.92	2.340	98.6	75	125	46.72	8.97	30	
Barium	78.1	0.409	40.92	38.26	97.3	75	125	82.50	5.49	30	
Cadmium	1.99	0.164	2.046	0.03943	95.2	75	125	2.210	10.6	30	
Chromium	64.3	0.0818	40.92	20.80	106	75	125	71.45	10.5	30	
Lead	20.5	0.164	20.46	1.423	93.2	75	125	22.83	10.8	30	
Selenium	3.93	0.409	4.092	0	96.1	75	125	4.204	6.63	30	
Silver	1.74	0.0818	2.046	0.01712	84.3	75	125	1.912	9.26	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: *7/25/2014*

Work Order: 1407184
CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

QC SUMMARY REPORT

Total Metals by EPA Method 6020

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: *7/25/2014*

Work Order: 1407184
CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: **MB-8157**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **7/21/2014**	RunNo: **15692**
Client ID: **MBLKS**	Batch ID: **8157**		Analysis Date: **7/21/2014**	SeqNo: **317548**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-8157**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **7/21/2014**	RunNo: **15692**
Client ID: **LCSS**	Batch ID: **8157**		Analysis Date: **7/21/2014**	SeqNo: **317549**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.491	0.250	0.5000	0	98.2	80	120				

Sample ID: **1407184-001ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **7/21/2014**	RunNo: **15692**
Client ID: **Composite C**	Batch ID: **8157**		Analysis Date: **7/21/2014**	SeqNo: **317551**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.279						0		20	

Sample ID: **1407184-001AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **7/21/2014**	RunNo: **15692**
Client ID: **Composite C**	Batch ID: **8157**		Analysis Date: **7/21/2014**	SeqNo: **317552**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.539	0.264	0.5281	0.03102	96.1	70	130				

Sample ID: **1407184-001AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **7/21/2014**	RunNo: **15692**
Client ID: **Composite C**	Batch ID: **8157**		Analysis Date: **7/21/2014**	SeqNo: **317553**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.544	0.269	0.5379	0.03102	95.4	70	130	0.5387	1.05	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: *7/25/2014*

Work Order: 1407184
CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

QC SUMMARY REPORT

Hydrocarbon Identification by NWTPH-HCID

Sample ID: **LCS-8171**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **7/21/2014**	RunNo: **15708**
Client ID: **LCSS**	Batch ID: **8171**		Analysis Date: **7/22/2014**	SeqNo: **317891**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	476	50.0	500.0	0	95.1	65	135				
Surr: 2-Fluorobiphenyl	22.4		20.00		112	50	150				
Surr: o-Terphenyl	19.2		20.00		95.8	50	150				

Sample ID: **MB-8171**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **7/21/2014**	RunNo: **15708**
Client ID: **MBLKS**	Batch ID: **8171**		Analysis Date: **7/22/2014**	SeqNo: **317892**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	20.0									
Mineral Spirits	ND	30.0									
Kerosene	ND	50.0									
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Mineral Oil	ND	100									
Surr: 2-Fluorobiphenyl	19.8		20.00		99.0	50	150				
Surr: o-Terphenyl	19.0		20.00		94.8	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

Sample Log-In Check List

Client Name:	**GEI**	Work Order Number:	**1407184**
Logged by:	**Clare Griggs**	Date Received:	**7/18/2014**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Coolers are present?	Yes ☐	No ☐	NA ☑
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Required ☑
6.	Was an attempt made to cool the samples?	Yes ☐	No ☐	NA ☑
7.	Were all coolers received at a temperature of >0°C to 10.0°C	Yes ☐	No ☐	NA ☑
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is the headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☐	No ☑	

Special Handling (if applicable)

18.	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:			

19. Additional remarks:

Composites of samples from multiple workorders.

Item Information

Fremont Analytical

Chain of Custody Record

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): 1407055
Date: 7/3/2014
Page 1 of 2

Client: GeoEngineers
Address: 600 Stewart St Suite 1700
City, State, Zip: Seattle, WA 98101
Tel: 206-423-8259
Reports To (PM): Jessica Smith
Fax:
Email: jasmith@geoengineers.com
Project Name: Rufus Block 20
Location: Seattle
Collected by: Claudia DeLuna
Project No: 20434-001-22

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identifications (NCID)	Diesel/Heavy Oil Range Organics (DX)	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Metals** (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)***	ECD (8011)	Comments/Depth
1 2030-33	6/30	1430	S				C					C					Composite C
2 2032A-33	6/30	1435															Jessica Smith
3 2063-24	7/2	1430					G					G					Composite G
4 2027-36	7/1	1430					D					D					Composite D
5 2032-42	7/2	1435					D					D					Composite D
6 2066-36	7/2	1437					F					F					Composite F
7 2022-42	7/2	1440															
8 2024-30	7/1	1435					D					D					Composite D
9 2013-24	7/2	1445															
10 2023-24	7/2	1450	✓				E					E					Composite E

**Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Mg 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		X	
Relinquished	Date/Time	Received	Date/Time
X		X	

Special Remarks:

TAT -> SameDay^ NextDay^ 2 Day 3 Day (STD)
^Please coordinate with the lab in advance

Fremont Analytical

Chain of Custody Record

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (Internal): 1407055

Date: 7/3/14

Page: 2 of: 2

Client: GeoEngineers

Address:

City, State, Zip:

Tel:

Reports To (PM): Jessica Smith

Fax:

Project Name: Rubis Block 20

Location:

Collected by: Claudia De La Vega

Email: jasmith@geoengineers.com

Project No: 20434-001-23

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SGMS VOC (EPA 8270)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082)	Metals** (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)***	EDB (8011)	Comments/Depth
1 2007-36	7/3	1440	S				H					H					Composite, H
2 2009-42	7/3	1445	S														Jess. ok to determine composite + analytical pathway
3																	
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 returned after 30 days)

Relinquished	Date/Time	Received	Date/Time
x		x	
Relinquished	Date/Time	Received	Date/Time
x		x	

Special Remarks:

TAT -> SameDay^ NextDay^ 2 Day 3 Day (STD)

^Please coordinate with the lab in advance

Fremont Analytical

Chain of Custody Record

1811 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (Internal): 1407057

Date: _____ Page: _____ of: 1

Client: _____ Project Name: _____

Address: _____ Location: _____

City, State, Zip _____ Tel: _____ Collected by: _____

Reports To (PM): _____ Fax: _____ Email: _____ Project No: _____

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 (NWTPH)	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							B							B				"Composite B"
2							A							A				"Composite A
3																		
4							A							A				Composite A
5																		
6																		
7							A							A				Composite A
8																		
9							C							C				Composite C
10							B							B				Composite B

*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		x	
Relinquished	Date/Time	Received	Date/Time
x		x	

TAT --> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

www.fremontanalytical.com

Fremont Analytical

Chain of Custody Record

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (Internal): 140782

Date: 7/15/14

Page: 1 of: 1

Client: GeoEngineers
Address: 600 Stewart St
City, State, Zip: Seattle, WA Tel: 206-483-8289
Reports To (PM): Jessica Smith Fax:

Project Name: Rufus Block 20
Location: Seattle, WA
Collected by: Claudia De La Via
Email: jasmith@geoengineers.com Project No: 20434.001.23

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, (S) = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SEMI VOC (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Metals** (6020 / 200.8)	Total (T) ; Dissolved (D)	Anions (IC)***	EDB (8011)	Comments/Depth
1	2028-32	7/14	1438	S														
2	2024-24		1440															
3	2039-33		1445															
4	2040-33		1447															
5	2041-32		1450					C					C					Comp C
6	2042-36		1455															
7	2068-30		1500															
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: Jessica to determine composite analytical pattern

Relinquished	Date/Time	Received	Date/Time
1	7/15/14 1612	SMV	7/15 1613
2			

TAT -> Same Day^ Next Day^ 2 Day 3 Day (STD)

^Please coordinate with the lab in advance

Fremont Analytical

Chain of Custody Record

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): 1407183
Date: 7/11/14
Page: 1 of:

Client: GeoEngineers
Address: 600 Stewart St
City, State, Zip: Seattle, WA Tel: 206-483-8289
Reports To (PM): Jessica Smith Fax:

Project Name: Rufus Block 20
Location: Seattle
Collected by: Claudia DeLuca
Email: jasmith@geoengineers.com Project No: 20434-001-23

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Metals** (6020 / 200.8)	Total (T)	Dissolved (D)	Anions (IC)***	EDB (8011)	Comments/Depth
1	2005-32	7/7	1440	S				I						I					
2	2010B-32		1445																
3	2006-36		1450					H						H					
4	2010A-36		1453					H						H					
5	2004-26		1455					I						I					
6	2055-24	7/8	1400					J						J					
7	2019-36	7/10	1430					F						F					
8	2065-33		1434																
9	2020-36		1439																
10	2016-20		1440					F						F					

**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
	7/11/14 1725		7/11 1725
Relinquished	Date/Time	Received	Date/Time

Special Remarks: Jessica to determine composite pattern + analysis

TAT -> SameDay* NextDay* 2 Day 3 Day (STD)
*Please coordinate with the lab in advance

Fremont Analytical

Chain of Custody Record

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (Internal): _____

Date: 7/11/14 Page: 2 of: 2

Client: GeoEngineers Project Name: Rotus Block 20

Address: _____ Location: _____

City, State, Zip _____ Tel: _____ Collected by: _____

Reports To (PM): Jessica Smith Fax: _____ Email: _____ Project No: 20454-001-25

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	cVX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SIM) VOC (EPA 8270)	PAH (EPA 8270) - SIM)	PCBs (EPA 8082)	Metals** (6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	Comments/Depth
1 2018-36	7/10	1445	S														
2 2018B-32	7/11	1430															
3 2015B-32		1435															
4 2061-24		1437					G					G					
5 2013B-30		1445					G					G					
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
[signature]	7/11/14 17:25	[signature]	7/a 1725
Relinquished	Date/Time	Received	Date/Time

Special Remarks: Jessica to determine composite pattern + analysis

TAT -> SameDay^ NextDay^ 2 Day 3 Day (STD)

*Please coordinate with the lab in advance.

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

GeoEngineers
Jessica Smith
600 Stewart Street, Suite 1700
Seattle, WA 98101

RE: Rufus Block 20 Composite
Lab ID: 1407184

October 27, 2014

Attention Jessica Smith:

Fremont Analytical, Inc. received 7 sample(s) on 7/18/2014 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Hydrocarbon Identification by NWTPH-HCID
Mercury by EPA Method 7471
Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020

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: *10/27/2014*

CLIENT: GeoEngineers
Project: Rufus Block 20 Composite
Lab Order: 1407184

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1407184-001	Composite C	06/23/2014 2:35 PM	07/18/2014 12:00 AM
1407184-002	Composite E	07/02/2014 2:50 PM	07/18/2014 12:00 AM
1407184-003	Composite F	07/02/2014 2:37 PM	07/18/2014 12:00 AM
1407184-004	Composite G	07/02/2014 2:30 PM	07/18/2014 12:00 AM
1407184-005	Composite H	07/03/2014 2:40 PM	07/18/2014 12:00 AM
1407184-006	Composite I	07/07/2014 2:40 PM	07/18/2014 12:00 AM
1407184-007	Composite J	07/08/2014 2:00 PM	07/18/2014 12:00 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **1407184**
Date: **10/27/2014**

CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

I. SAMPLE RECEIPT:
Samples receipt information is 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#: **1407184**

Date Reported: **10/27/2014**

Client: GeoEngineers **Collection Date:** 6/23/2014 2:35:00 PM

Project: Rufus Block 20 Composite

Lab ID: 1407184-001 **Matrix:** Soil

Client Sample ID: **Composite C**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	20.5	H	mg/Kg-dry	1	7/22/2014 3:38:00 AM
Mineral Spirits	ND	30.7	H	mg/Kg-dry	1	7/22/2014 3:38:00 AM
Kerosene	ND	51.1	H	mg/Kg-dry	1	7/22/2014 3:38:00 AM
Diesel (Fuel Oil)	ND	51.1	H	mg/Kg-dry	1	7/22/2014 3:38:00 AM
Heavy Oil	ND	102	H	mg/Kg-dry	1	7/22/2014 3:38:00 AM
Mineral Oil	ND	102	H	mg/Kg-dry	1	7/22/2014 3:38:00 AM
Surr: 2-Fluorobiphenyl	99.1	50-150	H	%REC	1	7/22/2014 3:38:00 AM
Surr: o-Terphenyl	94.4	50-150	H	%REC	1	7/22/2014 3:38:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.246		mg/Kg-dry	1	7/21/2014 3:09:08 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	3.97	0.0894		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Barium	62.9	0.447		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Cadmium	ND	0.179		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Chromium	33.9	0.0894		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Lead	5.71	0.179		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Selenium	ND	0.447		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Silver	ND	0.0894		mg/Kg-dry	1	7/21/2014 2:44:54 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	13.9			wt%	1	7/21/2014 10:58:55 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#: **1407184**

Date Reported: **10/27/2014**

Client: GeoEngineers **Collection Date:** 7/2/2014 2:50:00 PM

Project: Rufus Block 20 Composite

Lab ID: 1407184-002 **Matrix:** Soil

Client Sample ID: **Composite E**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	20.0	H	mg/Kg-dry	1	7/22/2014 4:40:00 AM
Mineral Spirits	ND	30.0	H	mg/Kg-dry	1	7/22/2014 4:40:00 AM
Kerosene	ND	50.0	H	mg/Kg-dry	1	7/22/2014 4:40:00 AM
Diesel (Fuel Oil)	ND	50.0	H	mg/Kg-dry	1	7/22/2014 4:40:00 AM
Heavy Oil	ND	100	H	mg/Kg-dry	1	7/22/2014 4:40:00 AM
Mineral Oil	ND	100	H	mg/Kg-dry	1	7/22/2014 4:40:00 AM
Surr: 2-Fluorobiphenyl	102	50-150	H	%REC	1	7/22/2014 4:40:00 AM
Surr: o-Terphenyl	96.7	50-150	H	%REC	1	7/22/2014 4:40:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.274		mg/Kg-dry	1	7/21/2014 3:15:38 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	4.26	0.0906		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Barium	73.6	0.453		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Cadmium	ND	0.181		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Chromium	40.5	0.0906		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Lead	18.9	0.181		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Selenium	ND	0.453		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Silver	ND	0.0906		mg/Kg-dry	1	7/21/2014 2:48:19 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	13.8			wt%	1	7/21/2014 10:58:55 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#: **1407184**

Date Reported: **10/27/2014**

Client: GeoEngineers **Collection Date:** 7/2/2014 2:37:00 PM

Project: Rufus Block 20 Composite

Lab ID: 1407184-003 **Matrix:** Soil

Client Sample ID: **Composite F**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	21.1	H	mg/Kg-dry	1	7/22/2014 5:11:00 AM
Mineral Spirits	ND	31.6	H	mg/Kg-dry	1	7/22/2014 5:11:00 AM
Kerosene	ND	52.6	H	mg/Kg-dry	1	7/22/2014 5:11:00 AM
Diesel (Fuel Oil)	ND	52.6	H	mg/Kg-dry	1	7/22/2014 5:11:00 AM
Heavy Oil	ND	105	H	mg/Kg-dry	1	7/22/2014 5:11:00 AM
Mineral Oil	ND	105	H	mg/Kg-dry	1	7/22/2014 5:11:00 AM
Surr: 2-Fluorobiphenyl	98.9	50-150	H	%REC	1	7/22/2014 5:11:00 AM
Surr: o-Terphenyl	94.1	50-150	H	%REC	1	7/22/2014 5:11:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.273		mg/Kg-dry	1	7/21/2014 3:17:13 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	4.58	0.0974		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Barium	94.4	0.487		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Cadmium	ND	0.195		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Chromium	40.0	0.0974		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Lead	12.0	0.195		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Selenium	ND	0.487		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Silver	ND	0.0974		mg/Kg-dry	1	7/21/2014 2:51:45 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	19.8			wt%	1	7/21/2014 10:58:55 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#: **1407184**

Date Reported: **10/27/2014**

Client: GeoEngineers **Collection Date:** 7/2/2014 2:30:00 PM

Project: Rufus Block 20 Composite

Lab ID: 1407184-004 **Matrix:** Soil

Client Sample ID: **Composite G**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 9102		Analyst: EC
Diesel (Fuel Oil)	ND	28.2	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Heavy Oil	295	70.4	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Surr: 2-Fluorobiphenyl	116	50-150	H	%REC	1	7/22/2014 5:42:00 AM
Surr: o-Terphenyl	113	50-150	H	%REC	1	7/22/2014 5:42:00 AM
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	20.5	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Mineral Spirits	ND	30.8	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Kerosene	ND	51.3	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Diesel (Fuel Oil)	ND	51.3	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Heavy Oil	DETECT	103	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Mineral Oil	ND	103	H	mg/Kg-dry	1	7/22/2014 5:42:00 AM
Surr: 2-Fluorobiphenyl	99.0	50-150	H	%REC	1	7/22/2014 5:42:00 AM
Surr: o-Terphenyl	96.6	50-150	H	%REC	1	7/22/2014 5:42:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.259		mg/Kg-dry	1	7/21/2014 3:18:49 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	5.03	0.0911		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Barium	90.1	0.455		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Cadmium	ND	0.182		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Chromium	36.3	0.0911		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Lead	21.8	0.182		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Selenium	ND	0.455		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Silver	ND	0.0911		mg/Kg-dry	1	7/21/2014 2:55:10 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	16.8			wt%	1	7/21/2014 10:58:55 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#: **1407184**

Date Reported: **10/27/2014**

Client: GeoEngineers **Collection Date:** 7/3/2014 2:40:00 PM

Project: Rufus Block 20 Composite

Lab ID: 1407184-005 **Matrix:** Soil

Client Sample ID: **Composite H**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	20.9	H	mg/Kg-dry	1	7/22/2014 6:13:00 AM
Mineral Spirits	ND	31.3	H	mg/Kg-dry	1	7/22/2014 6:13:00 AM
Kerosene	ND	52.2	H	mg/Kg-dry	1	7/22/2014 6:13:00 AM
Diesel (Fuel Oil)	ND	52.2	H	mg/Kg-dry	1	7/22/2014 6:13:00 AM
Heavy Oil	ND	104	H	mg/Kg-dry	1	7/22/2014 6:13:00 AM
Mineral Oil	ND	104	H	mg/Kg-dry	1	7/22/2014 6:13:00 AM
Surr: 2-Fluorobiphenyl	100	50-150	H	%REC	1	7/22/2014 6:13:00 AM
Surr: o-Terphenyl	96.6	50-150	H	%REC	1	7/22/2014 6:13:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.249		mg/Kg-dry	1	7/21/2014 3:20:25 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	2.44	0.0919		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Barium	66.0	0.460		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Cadmium	ND	0.184		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Chromium	33.0	0.0919		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Lead	9.60	0.184		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Selenium	ND	0.460		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Silver	ND	0.0919		mg/Kg-dry	1	7/21/2014 3:05:30 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	16.3			wt%	1	7/21/2014 10:58:55 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#: **1407184**

Date Reported: **10/27/2014**

Client: GeoEngineers **Collection Date:** 7/7/2014 2:40:00 PM

Project: Rufus Block 20 Composite

Lab ID: 1407184-006 **Matrix:** Soil

Client Sample ID: **Composite I**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	20.9		mg/Kg-dry	1	7/22/2014 6:44:00 AM
Mineral Spirits	ND	31.4		mg/Kg-dry	1	7/22/2014 6:44:00 AM
Kerosene	ND	52.3		mg/Kg-dry	1	7/22/2014 6:44:00 AM
Diesel (Fuel Oil)	ND	52.3		mg/Kg-dry	1	7/22/2014 6:44:00 AM
Heavy Oil	ND	105		mg/Kg-dry	1	7/22/2014 6:44:00 AM
Mineral Oil	ND	105		mg/Kg-dry	1	7/22/2014 6:44:00 AM
Surr: 2-Fluorobiphenyl	100	50-150		%REC	1	7/22/2014 6:44:00 AM
Surr: o-Terphenyl	96.4	50-150		%REC	1	7/22/2014 6:44:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.259		mg/Kg-dry	1	7/21/2014 3:25:16 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	1.67	0.0856		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Barium	55.9	0.428		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Cadmium	ND	0.171		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Chromium	36.9	0.0856		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Lead	8.11	0.171		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Selenium	ND	0.428		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Silver	ND	0.0856		mg/Kg-dry	1	7/21/2014 3:08:56 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	12.1			wt%	1	7/21/2014 10:58:55 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#: **1407184**

Date Reported: **10/27/2014**

Client: GeoEngineers **Collection Date:** 7/8/2014 2:00:00 PM

Project: Rufus Block 20 Composite

Lab ID: 1407184-007 **Matrix:** Soil

Client Sample ID: **Composite J**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 8171		Analyst: EC
Gasoline	ND	24.8		mg/Kg-dry	1	7/22/2014 7:15:00 AM
Mineral Spirits	ND	37.2		mg/Kg-dry	1	7/22/2014 7:15:00 AM
Kerosene	ND	62.0		mg/Kg-dry	1	7/22/2014 7:15:00 AM
Diesel (Fuel Oil)	ND	62.0		mg/Kg-dry	1	7/22/2014 7:15:00 AM
Heavy Oil	ND	124		mg/Kg-dry	1	7/22/2014 7:15:00 AM
Mineral Oil	ND	124		mg/Kg-dry	1	7/22/2014 7:15:00 AM
Surr: 2-Fluorobiphenyl	99.3	50-150		%REC	1	7/22/2014 7:15:00 AM
Surr: o-Terphenyl	95.6	50-150		%REC	1	7/22/2014 7:15:00 AM
Mercury by EPA Method 7471				Batch ID: 8157		Analyst: MW
Mercury	ND	0.302		mg/Kg-dry	1	7/21/2014 3:26:53 PM
Total Metals by EPA Method 6020				Batch ID: 8156		Analyst: TN
Arsenic	3.92	0.0992		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Barium	119	0.496		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Cadmium	ND	0.198		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Chromium	50.1	0.0992		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Lead	8.74	0.198		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Selenium	ND	0.496		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Silver	ND	0.0992		mg/Kg-dry	1	7/21/2014 3:12:21 PM
Sample Moisture (Percent Moisture)				Batch ID: R15680		Analyst: TK
Percent Moisture	24.8			wt%	1	7/21/2014 10:58:55 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: 1407184
CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **MB-8156** SampType: **MBLK** Units: **mg/Kg** Prep Date: **7/21/2014** RunNo: **15695**
Client ID: **MBLKS** Batch ID: **8156** Analysis Date: **7/21/2014** SeqNo: **317631**

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-8156** SampType: **LCS** Units: **mg/Kg** Prep Date: **7/21/2014** RunNo: **15695**
Client ID: **LCSS** Batch ID: **8156** Analysis Date: **7/21/2014** SeqNo: **317632**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	97.0	0.100	104.0	0	93.2	69.5	130.8				
Barium	757	0.500	779.0	0	97.2	74.8	125.3				
Cadmium	92.2	0.200	92.80	0	99.3	73.3	127.2				
Chromium	67.1	0.100	62.90	0	107	67.9	132				
Lead	309	0.200	319.0	0	96.8	75.9	124.1				
Selenium	72.0	0.500	77.70	0	92.6	63.1	136.4				
Silver	44.7	0.100	48.50	0	92.1	66.4	133.6				

Sample ID: **1407175-003ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/21/2014** RunNo: **15695**
Client ID: **BATCH** Batch ID: **8156** Analysis Date: **7/21/2014** SeqNo: **317634**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	2.18	0.0831						2.340	7.06	30	
Barium	35.6	0.416						38.26	7.31	30	
Cadmium	ND	0.166						0		30	
Chromium	21.1	0.0831						20.80	1.58	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: 1407184
CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1407175-003ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/21/2014** RunNo: **15695**
Client ID: **BATCH** Batch ID: **8156** Analysis Date: **7/21/2014** SeqNo: **317634**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.42	0.166						1.423	0.0175	30	
Selenium	ND	0.416						0		30	
Silver	ND	0.0831						0		30	

Sample ID: **1407175-003AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/21/2014** RunNo: **15695**
Client ID: **BATCH** Batch ID: **8156** Analysis Date: **7/21/2014** SeqNo: **317638**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.7	0.0837	41.87	2.340	106	75	125				
Barium	82.5	0.419	41.87	38.26	106	75	125				
Cadmium	2.21	0.167	2.094	0.03943	104	75	125				
Chromium	71.5	0.0837	41.87	20.80	121	75	125				
Lead	22.8	0.167	20.94	1.423	102	75	125				
Selenium	4.20	0.419	4.187	0	100	75	125				
Silver	1.91	0.0837	2.094	0.01712	90.5	75	125				

Sample ID: **1407175-003AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **7/21/2014** RunNo: **15695**
Client ID: **BATCH** Batch ID: **8156** Analysis Date: **7/21/2014** SeqNo: **317639**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	42.7	0.0818	40.92	2.340	98.6	75	125	46.72	8.97	30	
Barium	78.1	0.409	40.92	38.26	97.3	75	125	82.50	5.49	30	
Cadmium	1.99	0.164	2.046	0.03943	95.2	75	125	2.210	10.6	30	
Chromium	64.3	0.0818	40.92	20.80	106	75	125	71.45	10.5	30	
Lead	20.5	0.164	20.46	1.423	93.2	75	125	22.83	10.8	30	
Selenium	3.93	0.409	4.092	0	96.1	75	125	4.204	6.63	30	
Silver	1.74	0.0818	2.046	0.01712	84.3	75	125	1.912	9.26	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: *10/27/2014*

Work Order: 1407184
CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

QC SUMMARY REPORT

Total Metals by EPA Method 6020

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: *10/27/2014*

Work Order: 1407184
CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: **MB-8157**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **7/21/2014**	RunNo: **15692**
Client ID: **MBLKS**	Batch ID: **8157**		Analysis Date: **7/21/2014**	SeqNo: **317548**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-8157**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **7/21/2014**	RunNo: **15692**
Client ID: **LCSS**	Batch ID: **8157**		Analysis Date: **7/21/2014**	SeqNo: **317549**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.491	0.250	0.5000	0	98.2	80	120				

Sample ID: **1407184-001ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **7/21/2014**	RunNo: **15692**
Client ID: **Composite C**	Batch ID: **8157**		Analysis Date: **7/21/2014**	SeqNo: **317551**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.279						0		20	

Sample ID: **1407184-001AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **7/21/2014**	RunNo: **15692**
Client ID: **Composite C**	Batch ID: **8157**		Analysis Date: **7/21/2014**	SeqNo: **317552**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.539	0.264	0.5281	0.03102	96.1	70	130				

Sample ID: **1407184-001AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **7/21/2014**	RunNo: **15692**
Client ID: **Composite C**	Batch ID: **8157**		Analysis Date: **7/21/2014**	SeqNo: **317553**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.544	0.269	0.5379	0.03102	95.4	70	130	0.5387	1.05	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: 1407184
CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **1407184-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **7/22/2014** RunNo: **17618**
Client ID: **Composite C** Batch ID: **9102** Analysis Date: **7/22/2014** SeqNo: **351177**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	23.2						0		30	
Heavy Oil	ND	58.1						0		30	
Surr: 2-Fluorobiphenyl	23.3		23.24		100	50	150		0		
Surr: o-Terphenyl	22.3		23.24		96.0	50	150		0		

Sample ID: **LCS-9102** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/24/2014** RunNo: **17618**
Client ID: **LCSS** Batch ID: **9102** Analysis Date: **7/22/2014** SeqNo: **351185**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	476	20.0	500.0	0	95.1	65	135				
Surr: 2-Fluorobiphenyl	22.4		20.00		112	50	150				
Surr: o-Terphenyl	19.2		20.00		95.8	50	150				

Sample ID: **MB-9102** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/24/2014** RunNo: **17618**
Client ID: **MBLKS** Batch ID: **9102** Analysis Date: **7/22/2014** SeqNo: **351186**

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	19.8		20.00		99.0	50	150				
Surr: o-Terphenyl	19.0		20.00		94.8	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

Date: *10/27/2014*

Work Order: 1407184
CLIENT: GeoEngineers
Project: Rufus Block 20 Composite

QC SUMMARY REPORT

Hydrocarbon Identification by NWTPH-HCID

Sample ID: **LCS-8171**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **7/21/2014**	RunNo: **15708**
Client ID: **LCSS**	Batch ID: **8171**		Analysis Date: **7/22/2014**	SeqNo: **317891**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	476	50.0	500.0	0	95.1	65	135				
Surr: 2-Fluorobiphenyl	22.4		20.00		112	50	150				
Surr: o-Terphenyl	19.2		20.00		95.8	50	150				

Sample ID: **MB-8171**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **7/21/2014**	RunNo: **15708**
Client ID: **MBLKS**	Batch ID: **8171**		Analysis Date: **7/22/2014**	SeqNo: **317892**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	20.0									
Mineral Spirits	ND	30.0									
Kerosene	ND	50.0									
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Mineral Oil	ND	100									
Surr: 2-Fluorobiphenyl	19.8		20.00		99.0	50	150				
Surr: o-Terphenyl	19.0		20.00		94.8	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

Sample Log-In Check List

Client Name:	**GEI**	Work Order Number:	**1407184**
Logged by:	**Clare Griggs**	Date Received:	**7/18/2014**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Coolers are present?	Yes ☐	No ☐	NA ☑
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Required ☑
6.	Was an attempt made to cool the samples?	Yes ☐	No ☐	NA ☑
7.	Were all coolers received at a temperature of >0°C to 10.0°C	Yes ☐	No ☐	NA ☑
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is the headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☐	No ☑	

Special Handling (if applicable)

18.	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:			

19. Additional remarks:

Composites of samples from multiple workorders. 10/24/14: Client requested quantification of HCID detection for sample 004, expedited TAT.

Item Information

Fremont Analytical

Chain of Custody Record

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 7/3/2014

Laboratory Project No (internal): 1407055

Page: 1 of: 2

Client:	GeoEngineers	Project Name:	Rufus Block 20
Address:	600 Stewart St Suite 1700	Location:	Seattle
City, State, Zip	Seattle WA 98101	Collected by:	Claudia DeLuna
Tel:	206-433-8289	Email:	jasmith@geoengineers.com
Reports To (PM):	Jessica Smith	Fax:	Project No: 20434-001-23

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SIM PAH (EPA 8270 SIM)	PAH (EPA 8270)	PCBs (EPA 8082)	Metals** (6020 / 200.8)	Total (T) ; Dissolved (D)	Anions (IC)***	EDB (8011)	Comments/Depth
1	2020-33	6/30	1430	S				C					C					Composite C
2	2032A-33	6/30	1435															Jessica Smith
3	2063-24	7/2	1430					G					G					Composite G
4	2027-36	7/1	1430					D					D					Composite D
5	2032-42	7/2	1435					D					D					Composite D
6	2065-36	7/2	1437					F					F					Composite F
7	2022-42	7/2	1440															
8	2024-30	7/1	1435					D					D					Composite D
9	2013-24	7/2	1445															
10	2023-24	7/2	1450	✓				E					E					Composite E

**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		X	
Relinquished:	Date/Time:	Received:	Date/Time:
X		X	

Special Remarks:

TAT -> SameDay^ NextDay^ 2 Day 3 Day STD

^Please coordinate with the lab in advance

Fremont Analytical

Chain of Custody Record

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): 1407055

Date: 7/3/14

Page: 2 of: 2

Client: GeoEngineers

Address:

City, State, Zip: Tel:

Reports To (PM): Jessica Smith Fax:

Project Name: Ruby Block 20

Location:

Collected by: Claudia De La Vega

Email: jasmith@geoengineers.com

Project No: 20434-001-23

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	Short VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Metals** (6010 / 200.8)	Total (T)	Dissolved (D)	Anions (IC)***	EDB (8011)	Comments/Depth
1	2007-36	7/3	1440	S				H						H					Composite H
2	2009-42	7/3	1445	S															Jessica to determine composite + analytical pattern
3																			
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		x	
Relinquished	Date/Time	Received	Date/Time
x		x	

Special Remarks:

TAT -> SameDay^ NextDay^ 2 Day 3 Day (STD)

^Please coordinate with the lab in advance

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): 1407057

Date: _____ Page: _____ of: 1

Client: _____ Project Name: _____

Address: _____ Location: _____

City, State, Zip _____ Tel: _____ Collected by: _____

Reports To (PM): _____ Fax: _____ Email: _____ Project No: _____

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 (NWTPH)	Diesel/HeavyOil 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							B								B						"Composite B"
2							A								A						"Composite A
3																					
4							A								A						Composite A
5																					
6																					
7							A								A						Composite A
8																					
9							C								C						Composite C
10							B								B						Composite B

*Metals Analysis (Circle): WTCA-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		X	
Relinquished	Date/Time	Received	Date/Time
X		X	

TAT --> Next Day 2 Day 3 Day STD

Distribution: White - Lab, Yellow - File, Pink - Originator

Chain of Custody Record

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): 1407182
Date: 7/15/14
Page: 1 of 1

Client: GeoEngineers
Address: 600 Stewart St
City, State, Zip: Seattle, WA
Tel: 206-483-8289
Reports To (PM): Jessica Smith
Fax:
Email: jasmith@geoengineers.com

Project Name: Rufus Block 20
Location: Seattle, WA
Collected by: Claudia De La Vega
Project No: 20434-001-23

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SEMI VOC (EPA 8270 - SIM)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Metals** (6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)***	EDB (8011)	Comments/Depth
1 2028-32	7/14	1438	S														
2 2029-24		1440															
3 2039-33		1445															
4 2040-33		1447															
5 2041-32		1450					C						C				Comp C
6 2042-36		1455															
7 2068-30		1500															
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: Jessica to determine composite analytical pattern

Relinquished	Date/Time	Received	Date/Time
1	7/15/14 1612	1 SMW	7/15 1613
2		2	
3		3	

TAT -> Same Day* Next Day* 2 Day 3 Day STD
*Please coordinate with the lab in advance

Distribution: White - Lab, Yellow - File, Pink - Originator

Fremont Analytical

Chain of Custody Record

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): 1407183

Date: 7/11/14 Page: 1 of:

Client: GeoEngineers
Address: 600 Stewart St
City, State, Zip: Seattle, WA Tel: 206-483-8289
Reports To (PM): Jessica Smith Fax:

Project Name: Rufus Black 20
Location: Seattle
Collected by: Claudia DeLeVia
Email: jasmith@geoengineers.com
Project No: 20434-001-23

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SIM VOC (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Metals** (6020 / 200.8)	Total (T) & Dissolved (D)	Anions (IC)***	EDB (8011)	Comments/Depth
1	2005-32	7/7	1440	S				I					I					
2	2010B-32		1445															
3	2006-36		1450					H					H					
4	2010A-36		1453					H					H					
5	2004-26		1455					I					I					
6	2055-24	7/8	1400					J					J					
7	2019-36	7/10	1430					F					F					
8	2065-33		1434															
9	2020-36		1439															
10	2016-20		1440					F					F					

**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: Jessica to determine composite pattern + analysis

Relinquished	Date/Time	Received	Date/Time
[signature]	7/11/14 1725	[signature]	7/11 1725
Relinquished	Date/Time	Received	Date/Time

TAT -> SameDay^ NextDay^ 2 Day 3 Day STD

^Please coordinate with the lab in advance

Fremont Analytical

Chain of Custody Record

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): _____

Date: 7/11/14

Page: 2 of: 2

Client: Coe Engineers

Project Name: Rufus Block 20

Address: _____

Location: _____

City, State, Zip: _____ Tel: _____

Collected by: _____

Reports To (PM): Jessica Smith Fax: _____

Email: _____

Project No: 20434-001-25

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water

#	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SGMI VOC (EPA 8270 - SIM)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Metals** (6020) / 200.8)	Total (T) / Dissolved (D)	Anions (IC)***	EDB (8011)	Comments/Depth
1	2018-36	7/10	1445	S														
2	2018B-32	7/11	1430															
3	2015B-32		1435															
4	2061-24		1437					G					G					
5	2013B-30		1445					G					G					
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 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: Jessica to determine composite pattern + analysis

Relinquished	Date/Time	Received	Date/Time
[signature]	7/11/14 17:25	[signature]	7/11 1725
Relinquished	Date/Time	Received	Date/Time

TAT -> SameDay^ NextDay^ 2 Day 3 Day (STD)

^Please coordinate with the lab in advance

APPENDIX D
Report Limitations and Guidelines for Use

APPENDIX D
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 and 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 the project site bordered by Blanchard Street, 8th Avenue, Westlake Avenue, and Lenora Street in 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.

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.

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

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.

Uncertainty May Remain after Completion of Remedial Activities

Remediation activity completed in a portion of a site cannot wholly eliminate uncertainty regarding the potential for contamination in connection with a property. Our interpretation of subsurface conditions in this study is based on field observations and chemical analytical data from widely-spaced sampling locations. It is always possible that contamination exists in areas that were not explored, sampled or analyzed.

Subsurface Conditions Can Change

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

Soil and Groundwater End Use

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

Most Environmental Findings Are Professional Opinions

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

Geotechnical, Geologic and Geoenvironmental Reports Should Not Be Interchanged

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

Biological Pollutants

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

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

Have we delivered World Class Client Service?
Please let us know by visiting **www.geoengineers.com/feedback**.

GeoEngineers