GeoEngineers
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Bellingham, Washington 98225
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May 14, 2014

Sudden Valley Community Association
4 Clubhouse Circle
Bellingham, Washington 98229

Attention: Jeff Schlaack

Subject: Report of Environmental Services
Area Z Soil Stockpile Sampling
File No. 7536-002-05

INTRODUCTION AND SCOPE OF SERVICES

This report summarizes GeoEngineers' observations and soil sampling results on the "Area Z soil stockpile" in the Sudden Valley Community in Whatcom County. The soil stockpile was generated during removal of petroleum-impacted soil from the location of a sanitary sewer lift station installed in 2000 on Sudden Valley Community Association (SVCA) property. The volume of the soil stockpile was estimated at approximately 2,500 cubic yards during the remediation and placed into a lined area surrounded by hay bales and covered with visqueen. The approximate location of the site relative to surrounding physical features is shown in Vicinity Map, Figure 1. The approximate location of the soil stockpile and sample locations in the stockpile are shown in Area Z Soil Stockpile Test Pit Locations, Figure 2 and Area Z Community Garden Vicinity Test Pit Locations, Figure 3.

This report will be submitted to Washington State Department of Ecology (Ecology) for review under the Voluntary Cleanup Program (VCP) in pursuit of obtaining a no further action (NFA) opinion. We understand that SVCA will prepare and submit the VCP application to Ecology.

Our specific scope of services included the following:

1. Reviewed previous reports and file information related to the stockpile environmental conditions in Area Z.
2. Worked with SVCA to notify the underground utilities notification center in accordance with state law before conducting exploration activities.
3. Observed the completion of 10 shallow test pits in representative locations spatially distributed across the soil stockpile and 2 shallow test pits near the community garden. Test pit explorations were completed with a backhoe provided by SVCA.

4. Obtained representative soil samples from each of the test pits at approximately 2-foot-depth intervals. Field screened the soil samples for evidence of petroleum hydrocarbons using visual and water sheen screening methods. Selected samples at representative depths from each exploration for chemical analyses of gasoline-, diesel- and oil-range hydrocarbons by NWTPH-Gx and NWTPH-Dx with sulfuric acid/silica gel cleanup; benzene, ethylbenzene, toluene and total xylenes (BETX) by EPA Method 8021; selected two samples for chemical analyses of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) by EPA Method 8270DSIM; and MTCA Metals (mercury, arsenic, cadmium, chromium and lead) by EPA Method 6000/7000 series.
5. Evaluated the field and laboratory data relative to Washington State Model Toxics Control Act (MTCA) Method A cleanup levels, soil end-use criteria presented in Ecology's Guidance for the Remediation of Petroleum Contaminated Sites dated September 2011, and Ecology's Terrestrial Ecological Evaluation Process.

PREVIOUS REPORTS

We reviewed our report titled "Report of Remedial Excavation Activities, Area Z" dated May 23, 2000. A remedial excavation occurred in the SVCA Area Z property in March 2000 at the location of a proposed sewer lift station. The soil contamination appeared to be caused by releases from fuel pumps and/or piping that extended from a former diesel aboveground storage tank (AST) located to the west of the contaminated area. A total estimated volume of 2,500 cubic yards of soil with petroleum hydrocarbons at concentrations exceeding MTCA Method A cleanup levels was removed from the remedial excavation and placed at the present location of the soil stockpile that was sampled in March 2014. The soil stockpile (referred to as the landfarm cell in March 2000) was constructed using 6-millimeter thick plastic liner at the base of the cell. The cell was surrounded by hay bales. The contaminated soil was covered with 6-millimeter thick plastic and sand bags were used to secure the plastic in place.

The proposed on-site treatment of the contaminated soil stockpile was landfarming. GeoEngineers did not observe landfarming activities. We are not aware of any landfarming activity that has taken place on the contaminated soil stockpile.

SITE CONDITIONS

- The soil stockpile is located on Whatcom County Assessor parcel number 3704073823790000.
- The soil stockpile is located in a maintenance administration area used by SVCA employees. An access road and maintenance shop are located to the north, stockpiles of tree cuttings and unvegetated, straw covered ground to the east, a wooded area and then Lake Louise Road to the south, and stockpiles of tree cuttings and undeveloped area to the west.
- The soil stockpile is a level area approximately ½-acre in size. The surface of the stockpile is vegetated with alder tree saplings and tall grass. It appears that additional soil was placed over the original plastic sheeting covering the landfarm cell/stockpiled soil.
- Beaver Creek is located approximately 220 feet to the northeast of the soil stockpile. Austin Creek is located approximately 400 feet to the southeast of the soil stockpile.

- The site is zoned as "Rural" according to the Whatcom County Title 20 Zoning Designation map dated 2013.
- The nearest drinking water well is located at 2097 Lake Whatcom Boulevard, approximately 1.7 miles northeast from the site according to the Ecology Washington State Well Log Viewer online mapping application.
- We reviewed a U.S. Geologic Survey (USGS) geologic map for the project area, "Geologic Map of Western Whatcom County, Washington" by Don J. Easterbrook, 1976. The site lies within an area mapped as bedrock of the Chuckanut Formation. However, based on our previous exploration and excavation activities, the Area Z has modified ground (fill has been historically placed in this area) over alluvium from the nearby creek activity, glacial deposits and then bedrock.
- We reviewed "Soil Survey of Whatcom County Area, Washington," United States Department of Agriculture Soil Conservation Service (SCS), 1992. The site lies within an area mapped as Sehome loam, described as gravelly loam underlain by dense glacial till at depth. Permeability is moderate in the upper part of the Sehome soil and very slow in the dense glacial till.

2014 SOIL SAMPLING

General

A representative of GeoEngineers obtained soil samples and documented subsurface conditions during excavation of the test pits. During soil sampling activities, our representative also visually observed the soils encountered and performed field screening of soil samples from the test pits. Selected samples obtained from the test pits were submitted for chemical analytical testing. Soil sampling activities were conducted in general accordance with Ecology's "Guidance for Site Checks and Site Assessments for Underground Storage Tanks," dated February 1991 and revised in April 2003. Soil samples were submitted for chemical analyses from test pits TP-1 through TP-10 to characterize the soil in the soil stockpile. Soil samples were submitted for chemical analyses from test pits TP-11 and TP-12 to evaluate the potential for contaminant migration from the soil stockpile impacting soil at the community garden, located approximately 400 feet northwest of the soil stockpile. Soil samples were obtained from approximate 2-foot sample intervals from each test pit for field screening. The test pit locations shown in Figures 2 and 3 were recorded with a hand held GPS. Soil sample field screening and chemical analytical results are summarized in Summary of Soil Field Screening and Chemical Analytical Data, Table 1.

Sample Collection, Handling and Field Screening of Soil Samples

Soil samples were obtained from the test pits using a clean nitrile-gloved hand from the excavator bucket. Each sample was placed in a 4-ounce laboratory-prepared jar filled to minimize headspace. Samples obtained for gasoline-range petroleum hydrocarbons and volatiles analyses were collected using EPA Method 5035A sampling kits. Gloves were changed between samples to prevent cross-contamination. The soil samples were placed in an iced cooler pending transport to the analytical laboratory.

Each soil sample submitted for chemical analysis was identified by a unique sample designation that corresponded to its mapped sample location and depth below ground surface. Chain-of-custody procedures were followed in transporting the samples to the laboratory.

Field screening results were used to aid in the selection of soil samples for chemical analysis. The screening methods used included visual screening and water sheen screening. Visual screening consists of inspecting the soil for stains indicative of petroleum hydrocarbons. Visual screening is generally more effective when hydrocarbons are heavier, such as motor oil, or when hydrocarbon concentrations are high.

Water sheen screening involves placing soil in water and observing the water surface for signs of sheen. Sheen screening may detect both volatile and nonvolatile petroleum hydrocarbons. Sheen classifications are as follows:

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

Soil Stockpile Test Pits

Test pits TP-1 through TP-10 were completed at depths ranging from 5 to 10 feet below the surface (bgs). Subsurface conditions encountered in test pits TP-1 through TP-10 consisted of fill soil comprised of brown and gray silty sand with varying gravel content. Buried visqueen, assumed to be from the original landfarm cell construction, was observed at 3 feet bgs. The soils above the visqueen did not exhibit any field screening evidence of petroleum contamination; the gray colored soils below the visqueen intermittently exhibited field screening evidence of petroleum contamination. Occasional wood, concrete rubble, cobbles and asphalt concrete fragments were encountered in several test pits. Significant amounts of asphalt concrete (pavement) fragments were encountered in test pit TP-5 approximately 3 to 5 feet bgs. Shallow perched groundwater seepage was encountered approximately 5 feet and 4 feet bgs in test pits TP-3 and TP-5, respectively. Petroleum sheen was not observed on the groundwater seepage.

Community Garden Area Test Pits

Test pits TP-11 and TP-12 were completed at 4 to 6 feet bgs, respectively. Subsurface conditions encountered in test pit TP-11 consisted of brown silt with sand interpreted to be reworked, native weathered glaciomarine drift. Test pit TP-12 encountered a buried asphalt concrete pavement surface approximately 6 inches bgs underlain by gray silty sand with gravel interpreted to be native undisturbed soil. Shallow perched groundwater seepage was encountered approximately 3 feet bgs in test pit TP-11. Petroleum sheen was not observed on the groundwater seepage.

CHEMICAL ANALYTICAL RESULTS

Soil samples that exhibited the highest field screening evidence of petroleum contamination were submitted to ALS Environmental (ALS) in Everett for chemical analysis as previously described in the scope of this report. In some test pits, no field screening evidence of petroleum was observed. The laboratory report is attached to this report.

Gasoline-range petroleum hydrocarbons and BETX were not detected. Diesel- and or lube oil-range petroleum hydrocarbons either were not detected or were detected at concentrations less than the respective MTCA Method A cleanup levels with the exception of soil sample TP5-4-032514 from test pit TP-5. Soil sample TP5-4-032514 contained asphalt fragments which we were unable to segregate from the soil. This soil sample is the only sample that required dilution by the laboratory during NWTPH-Dx analysis. In our opinion, the elevated concentration of petroleum hydrocarbons in soil sample TP5-4-032514 is the result of the asphalt fragments in the soil sample.

MTCA 5 Metals and cPAHs either were not detected or were detected at concentrations less than the respective MTCA Method A cleanup levels.

TERRESTRIAL ECOLOGICAL EVALUATION

GeoEngineers evaluated whether contaminants detected in soil at the site pose a threat to terrestrial ecological receptors (plants, soil biota and wildlife). The site doesn't appear to qualify for the Terrestrial Ecological Evaluation (TEE) exclusions in WAC 173-340-7491(1). However, the site does qualify for a simplified TEE based on the summary of site conditions (habitat and potential receptors) presented below:

- According to the Whatcom County Critical Areas Ordinance Environmentally and Biologically Sensitive Areas map dated 2005, the site is not mapped in environmentally or biologically sensitive areas such as Category 1 through 4 wetlands, protected habitats and species, stream buffers, or aquifer susceptibility areas.
- The site is not used by wildlife species classified as threatened or endangered based on our review of the Washington Department of Fish & Wildlife (WDFW) Washington State Species of Concern Lists accessed online at http://wdfw.wa.gov/conservation/endangered/All/.
- The site is not used by plants classified as endangered, threatened, or sensitive based on our review of the Washington State Department of Natural Resources (WDNR) Natural Heritage Program List of Known Occurrences of Rare Plants in Washington, March 2014, Whatcom County lists accessed online at http://www1.dnr.wa.gov/nhp/refdesk/lists/plantsxco/whatcom.html.

GeoEngineers compared chemical analytical results from soil samples obtained at the site to MTCA simplified TEE soil concentrations (MTCA Table 749-2). The results of this comparison indicate that diesel and heavy oil-range petroleum hydrocarbons are the only chemicals of ecological concern. Diesel and heavy oil-range petroleum hydrocarbons were detected at concentrations less than the diesel-range organics simplified TEE soil concentration for unrestricted land use of 460 mg/kg in 8 of the 12 soil samples; the exceptions are soil samples obtained from test pits TP-4 (sample depth = 6 feet), TP-5 (sample depth = 4 feet), TP-9 (sample depth = 4 feet) and TP-12 (sample depth = 6 feet). These four samples are in the lower portion of the MTCA default biologically active zone, which ranges from 0 to 6 feet bgs.

The unrestricted land use simplified TEE soil concentration for diesel of 460 mg/kg is based on protection of soil biota. The industrial land use simplified TEE soil concentration for diesel is 15,000 mg/kg and is based on protection of wildlife. Diesel and heavy oil soil concentrations in the 12 soil samples obtained

at the site are less than 15,000 mg/kg. Therefore, we conclude that the diesel and heavy oil soil concentrations at the site do not pose a risk to wildlife.

In our opinion, the diesel-range and heavy oil range petroleum hydrocarbon concentrations detected in site soil are not likely to pose a risk to soil biota for the following reasons:

- Field screening evidence of petroleum hydrocarbons generally was not observed in the upper 5 feet of soil.
- Soil biota are expected to primarily be present in the top few feet of soil and not be significantly exposed to petroleum hydrocarbons in soil at between 4 and 6 feet bgs.
- Visqueen sheeting separates the upper clean soils and the lower petroleum hydrocarbon contaminated soils. The visqueen sheeting is present approximately 3 feet bgs.
- Based on the results of GeoEngineers' "Revised Draft Remedial Investigation/Feasibility Study Report" for the Irondale Iron and Steel Plant, Ecology Facility/Site No. 95275518 prepared for Ecology, dated August 13, 2009, soil biota bioassays at Irondale indicate that total petroleum hydrocarbons (TPH; diesel-range plus heavy oil-range petroleum hydrocarbons) soil cleanup levels protective of soil biota are much higher than the diesel-range simplified TEE soil concentration of 460 mg/kg. The site-specific TPH soil screening level for soil biota at Irondale was 5,200 mg/kg. This finding suggests that a higher TPH concentration limit for soil biota is likely more appropriate than the diesel-range simplified TEE soil concentration.

PETROLEUM HYDROCARBON IMPACTED SOIL REUSE CATEGORIES

Tables 12.1 and 12.2 in Ecology's Guidance for Remediation of Petroleum Contaminated Sites Publication No. 10-09-057 provide guidelines for reuse of petroleum contaminated soil. Based on the detected concentrations of diesel and heavy oil-range petroleum hydrocarbons, the soil generally classifies as soil category 2 (commercial fill above water table). The soil may also be classified as category 3 (paving base material & road construction) or category 4 (landfill daily cover or asphalt manufacturing). The Ecology guidance includes soil reuse limitations pertinent to the petroleum contaminated soil including but not limited to the following:

- The soil should not be placed in or directly adjacent to wetlands or surface water where contact with water is possible.
- If the soil is exposed, stormwater runoff should be contained or treated to prevent entrance to storm drains, surface water or wetlands.
- The soil should not be placed under stormwater infiltration facility or septic drain field.
- For category 3 soils, the soil should be a maximum 2 feet thick to minimize potential for leaching or vapor impacts.

Tables 12.1 and 12.2 are attached to this report. The complete soil reuse guidance can be accessed in Section 12 of the publication, online at https://fortress.wa.gov/ecy/publications/publications/1009057.pdf.

CONCLUSIONS

Based on the results of the chemical analytical testing, the following impacts to soil were identified:

MTCA Method A Cleanup Levels

- Gasoline-range petroleum hydrocarbons and BETX were not detected in any of the soil samples.
- Diesel and heavy oil-range petroleum hydrocarbons were detected at concentrations less than the MTCA Method A cleanup levels with the exception of soil sample TP5-4-032514, which contained fragments of asphalt concrete pavement. It is our opinion that the cured asphalt concrete fragments in the soil sample resulted in the high diesel and heavy oil-range concentrations in soil sample TP5-4-032514.
- Mercury, chromium and lead were detected at concentrations less than the corresponding MTCA Method A cleanup levels. Arsenic and cadmium were not detected.
- cPAHs were either not detected or were detected at concentrations less that the MTCA Method A Cleanup level.

Simplified TEE Soil Concentrations

- Mercury, chromium, lead and cPAHs were detected at concentrations less than their corresponding simplified TEE soil concentrations protective of plants, soil biota and wildlife.
- Diesel-range or heavy oil-range petroleum hydrocarbons were detected at concentrations greater than the diesel-range simplified TEE soil concentration in 4 out of 12 soil samples. However, based on the depth of these four soil samples, the expected depth of soil biota at the site, the presence of visqueen sheeting above petroleum-impacted soil, and the conservative nature of the simplified TEE soil concentration for diesel-range petroleum hydrocarbons, the diesel-range and heavy oil-range petroleum hydrocarbons are not expected to pose a risk to ecological receptors at the site.
- The community garden is located in an inferred upgradient location relative to the soil stockpile. Based on subsurface conditions observed in test pits completed in the soil stockpile and in the vicinity of the community garden, and distance between the two site features, it is unlikely that the petroleum hydrocarbons in the soil stockpile have migrated toward the community garden in our opinion. The somewhat elevated concentration of diesel-range petroleum hydrocarbons in soil sample TP12-6-032514 is potentially a result of asphalt fragments that fell into the test pit from asphalt concrete pavement that was encountered during excavation.

Petroleum Hydrocarbon Impacted Soil Status and Reuse Categories

Based on the detected concentrations of diesel and heavy oil-range petroleum hydrocarbons, the soil generally classifies as soil category 2 (commercial fill above water table). The soil may also be classified as category 3 (paving base material and road construction) or category 4 (landfill daily cover or asphalt manufacturing).

We conclude that the soil can remain in place at the site and does not need to be disposed off-site. If SVCA is considering other land uses that would involve moving the stockpiled soil, it should stay within Area Z and be placed above the water table, and capped by a paved surface or compacted gravel. In our opinion, this is a practicable alternative soil reuse activity that would be protective of the environment in accordance with the Ecology guidelines.

LIMITATIONS

We have prepared this report for the exclusive use of Sudden Valley Community Association. This report may be provided to regulatory agencies for review. This report is not intended for use by others and the information contained herein is not applicable to other sites. No other party may rely on the product of our services unless we agree 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.

Our conclusions are based on our site observations, field screening results and chemical analysis of a limited number of soil samples at the site. It is always possible that contaminants remain in areas that were not observed, sampled or tested.

Within the limitations of scope, schedule and budget, our services have been performed in accordance with our confirming agreement dated January 6, 2014, and 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 of this document (email, text, table and/or figure), if provided, and any attachments are only a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

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

Sincerely,
GeoEngineers, Inc.

Ron Bek, LG
Project Geologist

J. Robert Gordon, PE
Principal

RMB:JRG:tjh

Attachments:
Table 1. Summary of Soil Field Screening and Chemical Analytical Data
Figure 1. Vicinity Map
Figure 2. Area Z Soil Stockpile Test Pit Locations
Figure 3. Area Z Community Garden Vicinity Test Pit Locations
ALS Environmental Laboratory Report
Ecology Tables 12.1 and 12.2
Attachment A. Report Limitations and Guidelines for Use

One copy submitted electronically. Four hard copies submitted.

Table 1

Summary of Soil Field Screening and Chemical Analytical Data[1]

Area Z, Sudden Valley
Whatcom County, Washington

Sample Identification[2]	Date Sampled	Sample Depth (feet bgs)	Water Sheen Screening	Petroleum Hydrocarbons (mg/kg)			BTEX[5] (mg/kg)				MTCA Metals[6] (mg/kg)					Total cPAHs[7] (mg/kg)
				Gasoline Range[3]	Diesel Range[4]	Heavy Oil Range[4]	Benzene	Toluene	Ethylbenzene	Total Xylenes	Mercury	Arsenic	Cadmium	Chromium	Lead	TEQ
Soil Stockpile Samples																
TP1-3-032514	3/25/2014	3.0	NS	<3.0	<25	**260**	<0.030	<0.050	<0.050	<0.20	–	–	--	–	–	–
TP2-4-032514	3/25/2014	4.0	NS	<3.0	<25	**100**	<0.030	<0.050	<0.050	<0.20	–	–	--	–	–	–
TP3-5-032514	3/25/2014	5.0	SS	<3.0	<25	**95**	<0.030	<0.050	<0.050	<0.20	–	–	--	–	–	–
TP4-6-032514	3/25/2014	6.0	MS	<3.0	<25	**630**	<0.030	<0.050	<0.050	<0.20	<0.020	<5.0	<0.50	**17**	**28**	**0.004**
TP5-4-032514	3/25/2014	4.0	MS	<19	**910**	**1500**	<0.030	<0.050	<0.050	<0.20	–	–	--	–	–	–
TP6-6-032514	3/25/2014	6.0	SS	<3.0	<25	**110**	<0.030	<0.050	<0.050	<0.20	–	–	--	–	–	–
TP7-5-032514	3/25/2014	5.0	NS	<3.0	<25	**98**	<0.030	<0.050	<0.050	<0.20	–	–	--	–	–	–
TP8-4-032514	3/25/2014	4.0	NS	<3.0	<25	**76**	<0.030	<0.050	<0.050	<0.20	–	–	--	–	–	–
TP9-4-032514	3/25/2014	4.0	MS	<49	**1500**	**120**	<0.030	<0.050	<0.050	<0.20	**0.040**	<5.0	<0.50	**32**	**5.5**	<0.020
TP10-4-032514	3/25/2014	4.0	NS	<3.0	<25	**130**	<0.030	<0.050	<0.050	<0.20	–	–	--	–	–	–
Community Garden Area Samples																
TP11-3-032514	3/25/2014	3.0	NS	<3.0	<25	**92**	<0.030	<0.050	<0.050	<0.20	–	–	--	–	–	–
TP12-6-032514	3/25/2014	6.0	NS	<3.0	<25	**650**	<0.030	<0.050	<0.050	<0.20	–	–	--	–	–	–
MTCA Method A Cleanup Level for Unrestricted Land Use				100	2,000	2,000	0.03	7	6	9	2	20	2	2000[8]	250	0.1
Simplified Terrestrial Ecological Evaluation Concentrations[9]				200	460	460[10]	NA	NA	NA	NA	9	95	25	42	220	30

Notes:

[1] Chemical analyses by ALS Environmental, Inc. in Everett, Washington.

[2] Approximate sample locations are shown in Figures 2 and 3. Field screening results are described in the report.

[3] Gasoline range hydrocarbons analyzed using NWTPH-Gx.

[4] Diesel and heavy oil range hydrocarbons analyzed by petroleum hydrocarbon identification using NWTPH-Dx with silica gel cleanup.

[5] Benzene, toluene, ethylbenzene and total xylenes analysed using EPA Method 8021.

[6] MTCA metals analyzed by EPA Method 6020 except mercury analysed using EPA Method 7471.

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

[8] Cleanup level for Chromium III.

[9] Vaules from MTCA Table 749-2.

[10] Diesel range organics value from MTCA Table 749-2 used as a surrogate for heavy oil-range petroleum hydrocarbons.

NWTPH-Dx = Northwest Total Petroleum Hydrocarbons - Diesel Extended

NWTPH-Gx = Northwest Total Petroleum Hydrocarbons - Gasoline Extended

bgs = below ground surface

mg/kg = milligrams per kilogram

NA = No soil concentration is presented in MTCA Table 749-2.

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

MTCA = Model Toxics Control Act

A bolded value indicates an analyte has been detected at the indicated concentration.

Notes:
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Data Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
State Plane Washington North FIPS 4601 (Feet),
North American Datum 1983. North arrow oriented to grid north.

Vicinity Map

Area Z, Sudden Valley
Whatcom County, Washington

GeoEngineers

Figure 1

Office: BAM Path: P:\1\7536002\GIS\7536002_05_F1 Vicinity Map.mxd Modified: 4/29/2014 tnash

Legend

Approximate Soil Stockpile / Site Boundary

Approximate Test Pit Location and Test Pit Number

TP-1

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Source: Google Earth Aerial Photograph August 2011

Area Z Soil Stockpile Test Pit Locations

Area Z, Sudden Valley
Whatcom County, Washington

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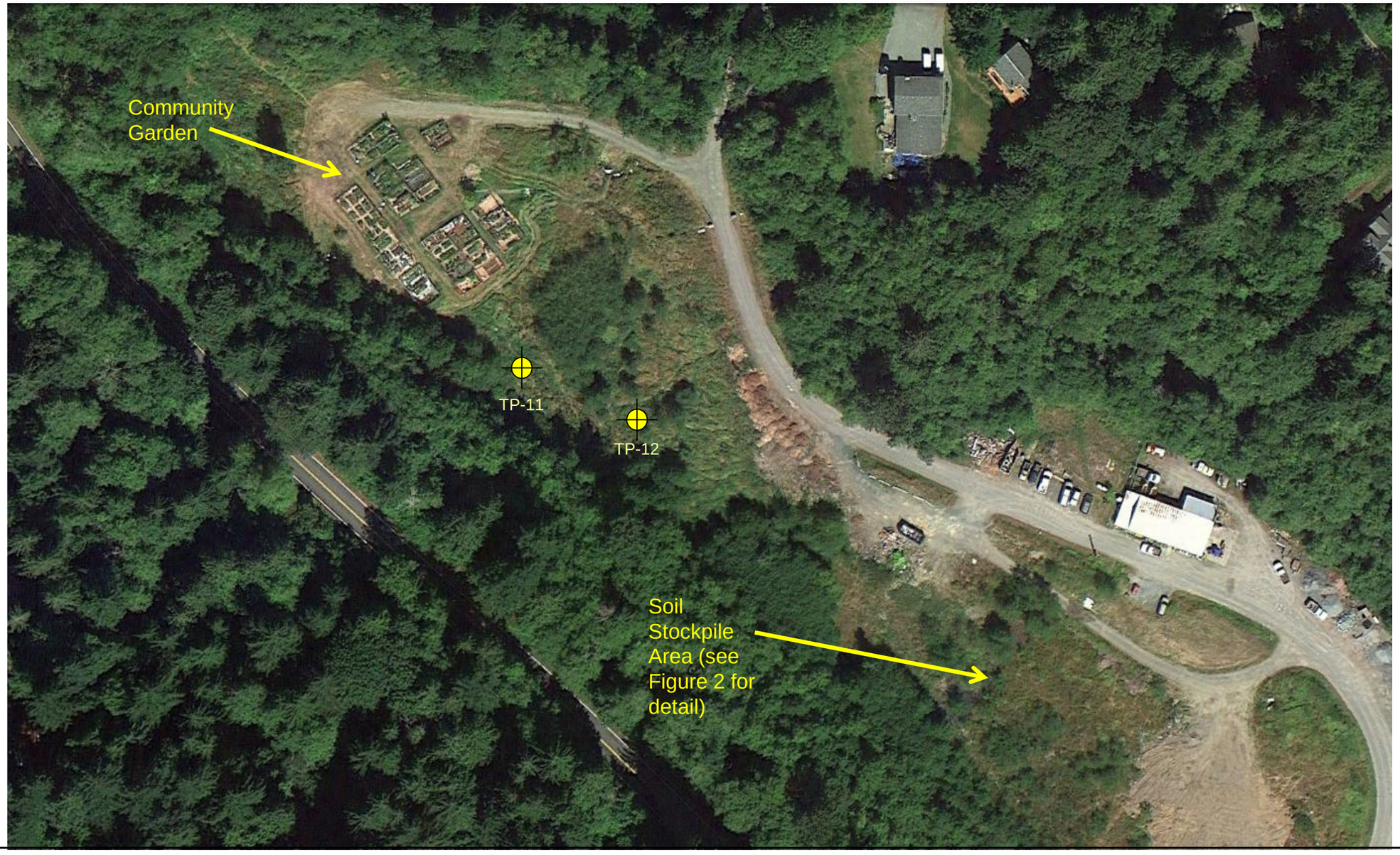
Figure 2



Legend

TP-11 — Approximate Test Pit Location and Test Pit Number

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Source: Google Earth Aerial Photograph August 2011

Area Z Community Garden Vicinity Test Pit Locations

Area Z, Sudden Valley
Whatcom County, Washington

GeoEngineers

Figure 3

April 9, 2014

Mr. Ron Bek
Geoengineers, Inc.
600 DuPont St.
Bellingham, WA 98225

Dear Mr. Bek,

On March 26th, 14 samples were received by our laboratory and assigned our laboratory project number EV14030179. The project was identified as your 7536-002-05. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Laboratory Group A Campbell Brothers Limited Company

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE: ALS JOB#: ALS SAMPLE#:	4/9/2014 EV14030179 EV14030179-01
CLIENT CONTACT:	Ron Bek	DATE RECEIVED:	03/26/14
CLIENT PROJECT:	7536-002-05	COLLECTION DATE:	3/25/2014 8:30:00 AM
CLIENT SAMPLE ID	TP1-3-032514	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	3.0	0.49	1.5	1	U	MG/KG	03/26/14	DLC
Benzene	SW8021	ND	0.030	0.0096	0.012	1	U	MG/KG	03/26/14	DLC
Toluene	SW8021	ND	0.050	0.0032	0.009	1	U	MG/KG	03/26/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0037	0.011	1	U	MG/KG	03/26/14	DLC
Total Xylenes	SW8021	ND	0.20	0.0096	0.029	1	U	MG/KG	03/26/14	DLC
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX w/ SGA	ND	25	3.5	11	1	U	MG/KG	03/27/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX w/ SGA	**260**	50	6.9	21	1		MG/KG	03/27/14	EBS

SURROGATE	METHOD	RESULTS	LIMITS MIN	MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**1.06**	60	140		0.843		106	03/26/14	DLC
TFT	SW8021	**1.07**	60	140		0.843		107	03/26/14	DLC
Pentacosane	NWTPH-DX w/ SGA	**1.27**	58	134		4.50		127	03/27/14	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains lube oil.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
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CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE: ALS JOB#: ALS SAMPLE#:	4/9/2014 EV14030179 EV14030179-02
CLIENT CONTACT:	Ron Bek	DATE RECEIVED:	03/26/14
CLIENT PROJECT:	7536-002-05	COLLECTION DATE:	3/25/2014 8:50:00 AM
CLIENT SAMPLE ID	TP2-4-032514	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	3.0	0.52	1.6	1	U	MG/KG	03/26/14	DLC
Benzene	SW8021	ND	0.030	0.010	0.013	1	U	MG/KG	03/26/14	DLC
Toluene	SW8021	ND	0.050	0.0034	0.010	1	U	MG/KG	03/26/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0039	0.012	1	U	MG/KG	03/26/14	DLC
Total Xylenes	SW8021	ND	0.20	0.010	0.031	1	U	MG/KG	03/26/14	DLC
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX w/ SGA	ND	25	3.0	8.9	1	U	MG/KG	03/27/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX w/ SGA	**100**	50	5.8	17	1		MG/KG	03/27/14	EBS

SURROGATE	METHOD	RESULTS	LIMITS MIN	MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**1.09**	60	140		0.895		109	03/26/14	DLC
TFT	SW8021	**1.10**	60	140		0.895		110	03/26/14	DLC
Pentacosane	NWTPH-DX w/ SGA	**1.20**	58	134		3.79		120	03/27/14	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains lube oil.

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CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE: ALS JOB#: ALS SAMPLE#:	4/9/2014 EV14030179 EV14030179-03
CLIENT CONTACT:	Ron Bek	DATE RECEIVED:	03/26/14
CLIENT PROJECT:	7536-002-05	COLLECTION DATE:	3/25/2014 9:13:00 AM
CLIENT SAMPLE ID	TP3-5-032514	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	3.0	0.39	1.2	1	**U**	MG/KG	03/26/14	DLC
Benzene	SW8021	ND	0.030	0.0077	0.009	1	**U**	MG/KG	03/26/14	DLC
Toluene	SW8021	ND	0.050	0.0026	0.007	1	**U**	MG/KG	03/26/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0030	0.008	1	**U**	MG/KG	03/26/14	DLC
Total Xylenes	SW8021	ND	0.20	0.0077	0.023	1	**U**	MG/KG	03/26/14	DLC
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX w/ SGA	ND	25	3.0	9.1	1	**U**	MG/KG	03/27/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX w/ SGA	**95**	50	5.9	18	1		MG/KG	03/27/14	EBS

SURROGATE	METHOD	RESULTS	LIMITS MIN	MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**0.924**	60	140		0.678		92.4	03/26/14	DLC
TFT	SW8021	**0.917**	60	140		0.678		91.7	03/26/14	DLC
Pentacosane	NWTPH-DX w/ SGA	**1.12**	58	134		3.87		112	03/27/14	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains lube oil.

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CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE: ALS JOB#: ALS SAMPLE#:	4/9/2014 EV14030179 EV14030179-04
CLIENT CONTACT:	Ron Bek	DATE RECEIVED:	03/26/14
CLIENT PROJECT:	7536-002-05	COLLECTION DATE:	3/25/2014 9:30:00 AM
CLIENT SAMPLE ID	TP4-6-032514	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	3.0	0.37	1.1	1	U	MG/KG	03/26/14	DLC
Benzene	SW8021	ND	0.030	0.0072	0.008	1	U	MG/KG	03/26/14	DLC
Toluene	SW8021	ND	0.050	0.0024	0.007	1	U	MG/KG	03/26/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0028	0.008	1	U	MG/KG	03/26/14	DLC
Total Xylenes	SW8021	ND	0.20	0.0072	0.022	1	U	MG/KG	03/26/14	DLC
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX w/ SGA	ND	25	2.8	8.4	1	U	MG/KG	03/27/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX w/ SGA	**630**	50	5.4	16	1		MG/KG	03/27/14	EBS
Benz[a]anthracene	SW8270DSIM	ND	20	1.1	3.2	1	U	UG/KG	04/02/14	LAP
Chrysene	SW8270DSIM	ND	20	1.5	4.4	1	U	UG/KG	04/02/14	LAP
Benzo(b)fluoranthene	SW8270DSIM	ND	20	1.4	4.3	1	U	UG/KG	04/02/14	LAP
Benzo(k)fluoranthene	SW8270DSIM	ND	20	1.2	3.6	1	U	UG/KG	04/02/14	LAP
Benzo(a)pyrene	SW8270DSIM	ND	20	1.2	3.5	1	U	UG/KG	04/02/14	LAP
Indeno(1,2,3-cd)pyrene	SW8270DSIM	**21**	20	1.4	4.1	1		UG/KG	04/02/14	LAP
Dibenzo(a,h)anthracene	SW8270DSIM	**20**	20	1.6	4.9	1		UG/KG	04/02/14	LAP
Mercury	SW7471	ND	0.020	0.0014	0.004	1	U	MG/KG	04/04/14	RAL
Arsenic	SW6020	ND	5.0	0.27	0.80	5	U	MG/KG	04/07/14	RAL
Cadmium	SW6020	ND	0.50	0.082	0.25	5	U	MG/KG	04/07/14	RAL
Chromium	SW6020	**17**	0.50	0.14	0.41	5		MG/KG	04/07/14	RAL
Lead	SW6020	**28**	0.50	0.088	0.26	5		MG/KG	04/07/14	RAL

SURROGATE	METHOD	RESULTS	LIMITS MIN	MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**1.09**	60	140		0.635		109	03/26/14	DLC
TFT	SW8021	**1.13**	60	140		0.635		113	03/26/14	DLC
Pentacosane	NWTPH-DX w/ SGA	**1.23**	58	134		3.55		123	03/27/14	EBS
Terphenyl-d14	SW8270DSIM	**0.770**	28.9	157		982		77.0	04/02/14	LAP

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains lube oil.

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CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE: ALS JOB#: ALS SAMPLE#:	4/9/2014 EV14030179 EV14030179-06
CLIENT CONTACT:	Ron Bek	DATE RECEIVED:	03/26/14
CLIENT PROJECT:	7536-002-05	COLLECTION DATE:	3/25/2014 10:00:00 AM
CLIENT SAMPLE ID	TP5-4-032514	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	19	0.56	1.7	1	**U**	MG/KG	03/26/14	DLC
Benzene	SW8021	ND	0.030	0.011	0.013	1	**U**	MG/KG	03/26/14	DLC
Toluene	SW8021	ND	0.050	0.0036	0.011	1	**U**	MG/KG	03/26/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0042	0.013	1	**U**	MG/KG	03/26/14	DLC
Total Xylenes	SW8021	ND	0.20	0.011	0.033	1	**U**	MG/KG	03/26/14	DLC
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX w/ SGA	**910**	250	30	89	10		MG/KG	03/27/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX w/ SGA	**1500**	500	57	170	10		MG/KG	03/27/14	EBS

SURROGATE	METHOD	RESULTS	LIMITS MIN	LIMITS MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**1.02**	60	140		0.959		102	03/26/14	DLC
TFT	SW8021	**1.09**	60	140		0.959		109	03/26/14	DLC
Pentacosane 10X Dilution	NWTPH-DX w/ SGA	**1.31**	58	134		3.76	**DS2**	131	03/27/14	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
DS2 - Due to high dilution factor surrogate results should be considered uncontrolled.
Chromatogram indicates that it is likely that sample contains weathered diesel and lube oil.
Gasoline range reporting limit raised due to semivolatile range product overlap.

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CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE: ALS JOB#: ALS SAMPLE#:	4/9/2014 EV14030179 EV14030179-07
CLIENT CONTACT:	Ron Bek	DATE RECEIVED:	03/26/14
CLIENT PROJECT:	7536-002-05	COLLECTION DATE:	3/25/2014 10:30:00 AM
CLIENT SAMPLE ID	TP6-6-032514	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	3.0	0.39	1.2	1	U	MG/KG	03/26/14	DLC
Benzene	SW8021	ND	0.030	0.0076	0.009	1	U	MG/KG	03/26/14	DLC
Toluene	SW8021	ND	0.050	0.0025	0.007	1	U	MG/KG	03/26/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0029	0.008	1	U	MG/KG	03/26/14	DLC
Total Xylenes	SW8021	ND	0.20	0.0076	0.023	1	U	MG/KG	03/26/14	DLC
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX w/ SGA	ND	25	3.1	9.3	1	U	MG/KG	03/27/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX w/ SGA	**110**	50	6.0	18	1		MG/KG	03/27/14	EBS

SURROGATE	METHOD	RESULTS	LIMITS MIN	MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**1.07**	60	140		0.666		107	03/26/14	DLC
TFT	SW8021	**1.20**	60	140		0.666		120	03/26/14	DLC
Pentacosane	NWTPH-DX w/ SGA	**1.06**	58	134		3.92		106	03/27/14	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains lube oil.

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CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE: ALS JOB#: ALS SAMPLE#:	4/9/2014 EV14030179 EV14030179-08
CLIENT CONTACT:	Ron Bek	DATE RECEIVED:	03/26/14
CLIENT PROJECT:	7536-002-05	COLLECTION DATE:	3/25/2014 10:50:00 AM
CLIENT SAMPLE ID	TP7-5-032514	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	3.0	0.32	0.97	1	**U**	MG/KG	03/26/14	DLC
Benzene	SW8021	ND	0.030	0.0063	0.007	1	**U**	MG/KG	03/26/14	DLC
Toluene	SW8021	ND	0.050	0.0021	0.006	1	**U**	MG/KG	03/26/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0024	0.007	1	**U**	MG/KG	03/26/14	DLC
Total Xylenes	SW8021	ND	0.20	0.0063	0.019	1	**U**	MG/KG	03/26/14	DLC
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX w/ SGA	ND	25	3.0	9.1	1	**U**	MG/KG	03/27/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX w/ SGA	**98**	50	5.9	18	1		MG/KG	03/27/14	EBS

SURROGATE	METHOD	RESULTS	LIMITS MIN	MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**1.03**	60	140		0.556		103	03/26/14	DLC
TFT	SW8021	**1.16**	60	140		0.556		116	03/26/14	DLC
Pentacosane	NWTPH-DX w/ SGA	**1.18**	58	134		3.84		118	03/27/14	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains lube oil.

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CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE: ALS JOB#: ALS SAMPLE#:	4/9/2014 EV14030179 EV14030179-09
CLIENT CONTACT:	Ron Bek	DATE RECEIVED:	03/26/14
CLIENT PROJECT:	7536-002-05	COLLECTION DATE:	3/25/2014 11:07:00 AM
CLIENT SAMPLE ID	TP8-4-032514	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	3.0	0.46	1.4	1	**U**	MG/KG	03/26/14	DLC
Benzene	SW8021	ND	0.030	0.0091	0.011	1	**U**	MG/KG	03/26/14	DLC
Toluene	SW8021	ND	0.050	0.0030	0.009	1	**U**	MG/KG	03/26/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0035	0.010	1	**U**	MG/KG	03/26/14	DLC
Total Xylenes	SW8021	ND	0.20	0.0091	0.027	1	**U**	MG/KG	03/26/14	DLC
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX w/ SGA	ND	25	3.0	9.1	1	**U**	MG/KG	03/27/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX w/ SGA	**76**	50	5.9	18	1		MG/KG	03/27/14	EBS

SURROGATE	METHOD	RESULTS	LIMITS MIN	MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**0.843**	60	140		0.795		84.3	03/26/14	DLC
TFT	SW8021	**0.970**	60	140		0.795		97.0	03/26/14	DLC
Pentacosane	NWTPH-DX w/ SGA	**1.24**	58	134		3.84		124	03/27/14	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains lube oil.

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CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE:	4/9/2014
		ALS JOB#:	EV14030179
		ALS SAMPLE#:	EV14030179-10
CLIENT CONTACT:	Ron Bek	DATE RECEIVED:	03/26/14
CLIENT PROJECT:	7536-002-05	COLLECTION DATE:	3/25/2014 11:30:00 AM
CLIENT SAMPLE ID	TP9-4-032514	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	49	0.57	1.7	1	U	MG/KG	03/26/14	DLC
Benzene	SW8021	ND	0.030	0.011	0.014	1	U	MG/KG	03/26/14	DLC
Toluene	SW8021	ND	0.050	0.0037	0.011	1	U	MG/KG	03/26/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0043	0.013	1	U	MG/KG	03/26/14	DLC
Total Xylenes	SW8021	ND	0.20	0.011	0.034	1	U	MG/KG	03/26/14	DLC
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX w/ SGA	**1500**	25	2.9	8.8	1		MG/KG	03/27/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX w/ SGA	**120**	50	5.7	17	1		MG/KG	03/27/14	EBS
Benz[a]anthracene	SW8270DSIM	ND	20	1.1	3.2	1	U	UG/KG	04/02/14	LAP
Chrysene	SW8270DSIM	ND	20	1.4	4.3	1	U	UG/KG	04/02/14	LAP
Benzo(b)fluoranthene	SW8270DSIM	ND	20	1.4	4.2	1	U	UG/KG	04/02/14	LAP
Benzo(k)fluoranthene	SW8270DSIM	ND	20	1.2	3.5	1	U	UG/KG	04/02/14	LAP
Benzo(a)pyrene	SW8270DSIM	ND	20	1.1	3.4	1	U	UG/KG	04/02/14	LAP
Indeno(1,2,3-cd)pyrene	SW8270DSIM	ND	20	1.4	4.1	1	U	UG/KG	04/02/14	LAP
Dibenzo(a,h)anthracene	SW8270DSIM	ND	20	1.6	4.8	1	U	UG/KG	04/02/14	LAP
Mercury	SW7471	**0.040**	0.020	0.0014	0.004	1		MG/KG	04/04/14	RAL
Arsenic	SW6020	ND	5.0	0.30	0.89	5	U	MG/KG	04/07/14	RAL
Cadmium	SW6020	ND	0.50	0.092	0.28	5	U	MG/KG	04/07/14	RAL
Chromium	SW6020	**32**	0.50	0.15	0.45	5		MG/KG	04/07/14	RAL
Lead	SW6020	**5.5**	0.50	0.098	0.29	5		MG/KG	04/07/14	RAL

SURROGATE	METHOD	RESULTS	LIMITS MIN	MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**1.05**	60	140		0.986		105	03/26/14	DLC
TFT	SW8021	**1.13**	60	140		0.986		113	03/26/14	DLC
Pentacosane	NWTPH-DX w/ SGA	**1.22**	58	134		3.72		122	03/27/14	EBS
Terphenyl-d14	SW8270DSIM	**0.791**	28.9	157		963		79.1	04/02/14	LAP

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains weathered diesel and lube oil.
Gasoline range reporting limit raised due to semivolatile range product overlap.
Oil range product results biased high due to diesel range product overlap.

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CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE: ALS JOB#: ALS SAMPLE#:	4/9/2014 EV14030179 EV14030179-12
CLIENT CONTACT:	Ron Bek	DATE RECEIVED:	03/26/14
CLIENT PROJECT:	7536-002-05	COLLECTION DATE:	3/25/2014 11:57:00 AM
CLIENT SAMPLE ID	TP10-4-032514	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	3.0	0.39	1.2	1	**U**	MG/KG	03/27/14	DLC
Benzene	SW8021	ND	0.030	0.0075	0.009	1	**U**	MG/KG	03/27/14	DLC
Toluene	SW8021	ND	0.050	0.0025	0.007	1	**U**	MG/KG	03/27/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0029	0.008	1	**U**	MG/KG	03/27/14	DLC
Total Xylenes	SW8021	ND	0.20	0.0075	0.023	1	**U**	MG/KG	03/27/14	DLC
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX w/ SGA	ND	25	2.9	8.7	1	**U**	MG/KG	03/27/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX w/ SGA	**130**	50	5.6	17	1		MG/KG	03/27/14	EBS

SURROGATE	METHOD	RESULTS	LIMITS MIN	MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**1.00**	60	140		0.661		100	03/27/14	DLC
TFT	SW8021	**1.07**	60	140		0.661		107	03/27/14	DLC
Pentacosane	NWTPH-DX w/ SGA	**1.32**	58	134		3.69		132	03/27/14	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains lube oil.

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CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE: ALS JOB#: ALS SAMPLE#:	4/9/2014 EV14030179 EV14030179-13
CLIENT CONTACT:	Ron Bek	DATE RECEIVED:	03/26/14
CLIENT PROJECT:	7536-002-05	COLLECTION DATE:	3/25/2014 1:45:00 PM
CLIENT SAMPLE ID	TP11-3-032514	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	3.0	0.46	1.4	1	U	MG/KG	03/26/14	DLC
Benzene	SW8021	ND	0.030	0.0090	0.011	1	U	MG/KG	03/26/14	DLC
Toluene	SW8021	ND	0.050	0.0030	0.009	1	U	MG/KG	03/26/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0035	0.010	1	U	MG/KG	03/26/14	DLC
Total Xylenes	SW8021	ND	0.20	0.0090	0.027	1	U	MG/KG	03/26/14	DLC
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX w/ SGA	ND	25	3.0	8.9	1	U	MG/KG	03/27/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX w/ SGA	**92**	50	5.8	17	1		MG/KG	03/27/14	EBS

SURROGATE	METHOD	RESULTS	LIMITS MIN	MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**1.01**	60	140		0.791		101	03/26/14	DLC
TFT	SW8021	**1.12**	60	140		0.791		112	03/26/14	DLC
Pentacosane	NWTPH-DX w/ SGA	**1.24**	58	134		3.78		124	03/27/14	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

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ALS Laboratory Group A Campbell Brothers Limited Company

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE: ALS JOB#: ALS SAMPLE#:	4/9/2014 EV14030179 EV14030179-14
CLIENT CONTACT:	Ron Bek	DATE RECEIVED:	03/26/14
CLIENT PROJECT:	7536-002-05	COLLECTION DATE:	3/25/2014 2:00:00 PM
CLIENT SAMPLE ID	TP12-6-032514	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	3.0	0.51	1.5	1	**U**	MG/KG	03/27/14	DLC
Benzene	SW8021	ND	0.030	0.010	0.012	1	**U**	MG/KG	03/27/14	DLC
Toluene	SW8021	ND	0.050	0.0034	0.010	1	**U**	MG/KG	03/27/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0039	0.012	1	**U**	MG/KG	03/27/14	DLC
Total Xylenes	SW8021	ND	0.20	0.010	0.030	1	**U**	MG/KG	03/27/14	DLC
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX w/ SGA	ND	50	5.6	17	2	**U**	MG/KG	03/28/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX w/ SGA	**650**	100	11	33	2		MG/KG	03/28/14	EBS

SURROGATE	METHOD	RESULTS	LIMITS MIN	MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**1.17**	60	140		0.882		117	03/27/14	DLC
TFT	SW8021	**1.26**	60	140		0.882		126	03/27/14	DLC
Pentacosane 2X Dilution	NWTPH-DX w/ SGA	**1.22**	58	134		3.59		122	03/28/14	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains lube oil.

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CERTIFICATE OF ANALYSIS

CLIENT: Geoengineers, Inc.
600 DuPont St.
Bellingham, WA 98225

CLIENT CONTACT: Ron Bek
CLIENT PROJECT: 7536-002-05

DATE: 4/9/2014
ALS SDG#: EV14030179
WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MB-032514S - Batch 7742 - Soil by NWTPH-GX Prepared 03/25/14 09:00

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Gasoline	NWTPH-GX	ND	3.0	0.49	1.5	1	U	MG/KG-dry	03/25/14	DLC

SURROGATE	METHOD	RESULTS	MIN	LIMITS MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**112**	60	140		0.500		**112**	03/25/14	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-032514S - Batch 7742 - Soil by SW8021 Prepared 03/25/14 09:00

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Benzene	SW8021	ND	0.030	0.0061	0.018	1	U	MG/KG-dry	03/25/14	DLC
Toluene	SW8021	ND	0.050	0.0067	0.020	1	U	MG/KG-dry	03/25/14	DLC
Ethylbenzene	SW8021	ND	0.050	0.0053	0.016	1	U	MG/KG-dry	03/25/14	DLC
Total Xylenes	SW8021	ND	0.20	0.018	0.053	1	U	MG/KG-dry	03/25/14	DLC

SURROGATE	METHOD	RESULTS	MIN	LIMITS MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	SW8021	**99.5**	60	140		0.500		**99.5**	03/25/14	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-032714S - Batch 7766 - Soil by NWTPH-DX Prepared 03/27/14 13:14

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Total Petroleum Hydrocarbon – Diesel	NWTPH-DX	ND	25	3.9	12	1	U	MG/KG	03/28/14	EBS
Total Petroleum Hydrocarbon – Oil	NWTPH-DX	ND	50	7.6	23	1	U	MG/KG	03/28/14	EBS

SURROGATE	METHOD	RESULTS	MIN	LIMITS MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
Pentacosane	NWTPH-DX	**115**	58	134		5.00		**115**	03/28/14	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-040214S - Batch 7784 - Soil by SW8270DSIM Prepared 04/04/14 17:37

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Benz[a]anthracene	SW8270DSIM	ND	20	1.1	3.3	1	U	UG/KG	04/04/14	LAP
Chrysene	SW8270DSIM	ND	20	1.5	4.5	1	U	UG/KG	04/04/14	LAP
Benzo(b)fluoranthene	SW8270DSIM	ND	20	1.5	4.4	1	U	UG/KG	04/04/14	LAP
Benzo(k)fluoranthene	SW8270DSIM	ND	20	1.2	3.6	1	U	UG/KG	04/04/14	LAP
Benzo(a)pyrene	SW8270DSIM	ND	20	1.2	3.5	1	U	UG/KG	04/04/14	LAP

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CERTIFICATE OF ANALYSIS

CLIENT: Geoengineers, Inc.
600 DuPont St.
Bellingham, WA 98225

CLIENT CONTACT: Ron Bek
CLIENT PROJECT: 7536-002-05

DATE: 4/9/2014
ALS SDG#: EV14030179
WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MB-040214S - Batch 7784 - Soil by SW8270DSIM Prepared 04/04/14 17:37

Indeno(1,2,3-cd)pyrene	SW8270DSIM	ND	20	1.4	4.2	1	U	UG/KG	04/04/14	LAP
Dibenzo(a,h)anthracene	SW8270DSIM	ND	20	1.7	5.0	1	U	UG/KG	04/04/14	LAP

SURROGATE	METHOD	RESULTS	LIMITS MIN	LIMITS MAX	RPD	SPIKE ADDED	QUAL	%REC	ANALYSIS DATE	ANALYSIS BY
Terphenyl-d14	SW8270DSIM	**89.5**	28.9	157		1000		**89.5**	04/04/14	LAP

U - Analyte analyzed for but not detected at level above reporting limit.

MBLK-231354 - Batch R231354 - Soil by SW7471 Prepared 04/04/14

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Mercury	SW7471	ND	0.020	0.0014	0.0041	1	U	MG/KG	04/04/14	RAL

U - Analyte analyzed for but not detected at level above reporting limit.

MB2-040414S - Batch 7783 - Soil by SW6020 Prepared 04/04/14 12:00

ANALYTE	METHOD	RESULTS	RL	LIMITS MDL	PQL	DILUTION FACTOR	QUAL	UNITS	ANALYSIS DATE	ANALYSIS BY
Arsenic	SW6020	ND	1.0	0.049	0.15	1	U	MG/KG	04/04/14	RAL
Cadmium	SW6020	ND	0.10	0.015	0.045	1	U	MG/KG	04/04/14	RAL
Chromium	SW6020	ND	0.10	0.025	0.074	1	U	MG/KG	04/04/14	RAL
Lead	SW6020	ND	0.10	0.016	0.047	1	U	MG/KG	04/04/14	RAL

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT: Geoengineers, Inc.
600 DuPont St.
Bellingham, WA 98225

CLIENT CONTACT: Ron Bek
CLIENT PROJECT: 7536-002-05

DATE: 4/9/2014
ALS SDG#: EV14030179
WDOE ACCREDITATION: C601

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 7742 - Soil by NWTPH-GX Prepared 03/25/14 09:00

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	SPIKE ADDED	LIMITS MIN	LIMITS MAX	RPD	ANALYSIS DATE	ANALYSIS BY
Gasoline - BS	NWTPH-GX	**18**			25.0	59	104		03/25/14	DLC
Gasoline - BSD	NWTPH-GX	**18**	**1**		25.0	59	104	15	03/25/14	DLC

SURROGATE	METHOD	%REC	RPD	QUAL	SPIKE ADDED	LIMITS MIN	LIMITS MAX	RPD	ANALYSIS DATE	ANALYSIS BY
TFT - BS	NWTPH-GX	**129**			0.500	60	140		03/25/14	DLC
TFT - BSD	NWTPH-GX	**131**			0.500	60	140		03/25/14	DLC

ALS Test Batch ID: 7742 - Soil by SW8021 Prepared 03/25/14 09:00

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	SPIKE ADDED	LIMITS MIN	LIMITS MAX	RPD	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	SW8021	**0.87**			1.00	67.7	124		03/25/14	DLC
Benzene - BSD	SW8021	**0.86**	**0**		1.00	67.7	124	8.5	03/25/14	DLC
Toluene - BS	SW8021	**0.90**			1.00	71	123		03/25/14	DLC
Toluene - BSD	SW8021	**0.90**	**0**		1.00	71	123	9.7	03/25/14	DLC
Ethylbenzene - BS	SW8021	**0.89**			1.00	69.8	117		03/25/14	DLC
Ethylbenzene - BSD	SW8021	**0.89**	**0**		1.00	69.8	117	10	03/25/14	DLC
Total Xylenes - BS	SW8021	**2.7**			3.00	70	119		03/25/14	DLC
Total Xylenes - BSD	SW8021	**2.7**	**0**		3.00	70	119	10	03/25/14	DLC

SURROGATE	METHOD	%REC	RPD	QUAL	SPIKE ADDED	LIMITS MIN	LIMITS MAX	RPD	ANALYSIS DATE	ANALYSIS BY
TFT - BS	SW8021	**91.7**			0.500	60	140		03/25/14	DLC
TFT - BSD	SW8021	**90.9**			0.500	60	140		03/25/14	DLC

ALS Test Batch ID: 7766 - Soil by NWTPH-DX Prepared 03/27/14 13:14

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	SPIKE ADDED	LIMITS MIN	LIMITS MAX	RPD	ANALYSIS DATE	ANALYSIS BY
Total Petroleum Hydrocarbon – Diesel - BS	NWTPH-DX	**130**			125	76.2	112		03/27/14	EBS
Total Petroleum Hydrocarbon – Diesel - BSD	NWTPH-DX	**130**	**1**		125	76.2	112	12	03/27/14	EBS

SURROGATE	METHOD	%REC	RPD	QUAL	SPIKE ADDED	LIMITS MIN	LIMITS MAX	RPD	ANALYSIS DATE	ANALYSIS BY
Pentacosane - BS	NWTPH-DX	**116**			5.00	58	134		03/27/14	EBS
Pentacosane - BSD	NWTPH-DX	**115**			5.00	58	134		03/27/14	EBS

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CERTIFICATE OF ANALYSIS

CLIENT:	Geoengineers, Inc. 600 DuPont St. Bellingham, WA 98225	DATE:	4/9/2014
		ALS SDG#:	EV14030179
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Ron Bek		
CLIENT PROJECT:	7536-002-05		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 7784 - Soil by SW8270DSIM Prepared 04/02/14 17:37

SURROGATE	METHOD	%REC	RPD	QUAL	SPIKE ADDED	LIMITS MIN	LIMITS MAX	RPD	ANALYSIS DATE	ANALYSIS BY
Terphenyl-d14 - BS	SW8270DSIM	**72.2**			1000	28.9	157		04/02/14	LAP
Terphenyl-d14 - BSD	SW8270DSIM	**73.8**			1000	28.9	157		04/02/14	LAP

ALS Test Batch ID: R231354 - Soil by SW7471 Prepared 04/04/14

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	SPIKE ADDED	LIMITS MIN	LIMITS MAX	RPD	ANALYSIS DATE	ANALYSIS BY
Mercury - BS	SW7471	**99**			100	81.8	117		04/04/14	RAL
Mercury - BSD	SW7471	**99**	**0**		100	81.8	117	8.84	04/04/14	RAL

ALS Test Batch ID: 7783 - Soil by SW6020 Prepared 04/04/14 12:00

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	SPIKE ADDED	LIMITS MIN	LIMITS MAX	RPD	ANALYSIS DATE	ANALYSIS BY
Arsenic - BS	SW6020	**5.2**			5.00	80	120		04/04/14	RAL
Arsenic - BSD	SW6020	**5.3**	**2**		5.00	80	120	8.91	04/04/14	RAL
Cadmium - BS	SW6020	**5.1**			5.00	80	120		04/04/14	RAL
Cadmium - BSD	SW6020	**5.2**	**3**		5.00	80	120	9.2	04/04/14	RAL
Chromium - BS	SW6020	**5.2**			5.00	80	120		04/04/14	RAL
Chromium - BSD	SW6020	**5.3**	**2**		5.00	80	120	9.6	04/04/14	RAL
Lead - BS	SW6020	**5.2**			5.00	80	120		04/04/14	RAL
Lead - BSD	SW6020	**5.3**	**3**		5.00	80	120	9.36	04/04/14	RAL

APPROVED BY

Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
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Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only): EV1403017 9

Date 3-25-14 Page 1 Of 2

PROJECT ID: 7536-002-05
REPORT TO COMPANY: GeoEngineers
PROJECT MANAGER: Ron Beck
ADDRESS: 600 Dupont ST Bellingham WA 98225
PHONE: 3603032819 FAX: 3606475044
P.O. #: E-MAIL: rbeck@geoengineers
INVOICE TO COMPANY:
ATTENTION: SAA
ADDRESS:

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX w/ silica gel cleanup	NWTPH-GX w/ BTEX	BTEX by EPA-8021	MTBE by EPA-8021 ☐ EPA-8260 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA-8270 SIM ☐	PCB ☐ Pesticides ☐ by EPA 8081/8082	Metals-MTCA-5 ☒ RCRA-8 ☐ Pri Pol ☐ TAL ☐	Metals Other (Specify)	TCLP-Metals ☐ VOA ☐ Semi-Vol ☐ Pest ☐ Herbs ☐	OTHER (Specify): cPAHs	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. TP1-3-032514	3,25,14	830	S	1		X	X														2	
2. TP2-4-032514		850		2		X	X															
3. TP3-5-032514		913		3		X	X															
4. TP4-6-032514		930		4		X	X										⊗		⊗			
5. TP4-7-032514		940		5																		
6. TP5-4-032514		1000		6		X	X															
7. TP6-6-032514		1030		7		X	X															
8. TP7-5-032514		1050		8		X	X															
9. TP8-4-032514		1107		9		X	X															
10. TP9-4-032514	3,25,14	1130	S	10		X	X										⊗		⊗		2	

SPECIAL INSTRUCTIONS return cooler + box of 4oz jars. Hold leftover samples for more tests.

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Ron Beck, GEI, 3/26/14, 1300
   Received By: Shawn Robinson ALS 3/26/14 12:40
2. Relinquished By:
   Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: 10 Standard | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: ~~5~~ Standard | 3 | 1 | SAME DAY

OTHER: Specify: ⊗ Added 4/2/14 on Std TAT. OK

* Turnaround request less than standard may incur Rush Charges

ALS Environmental
8620 Holly Drive, Suite 100
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Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only): EV1403179

Date 3/25/14 Page 2 Of 2

PROJECT ID: 7536-002-05
REPORT TO COMPANY: GeoEngineers
PROJECT MANAGER: Ron Belk
ADDRESS: 600 Dupont ST
Bellingham WA 98225
PHONE: 360 303 2819 FAX: 360 647 5044
P.O. #: E-MAIL: rbelk@geoengineers
INVOICE TO COMPANY:
ATTENTION: SAA
ADDRESS:

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX w/ si gel clean	NWTPH-GX w/ BTEX	BTEX by EPA-8021	MTBE by EPA-8021 ☐ EPA-8260 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA-8270 SIM ☐	PCB ☐ Pesticides ☐ by EPA 8081/8082	Metals-MTCA-5 ☐ RCRA-8 ☐ Pri Pol ☐ TAL ☐	Metals Other (Specify)	TCLP-Metals ☐ VOA ☐ Semi-Vol ☐ Pest ☐ Herbs ☐	OTHER (Specify)	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. TP9-6-032514	3/25/14	1133	S	11																2	
2. TP10-4-032514	3/25/14	1157		12		X	X													1	
3. TP11-3-032514		1345		13		X	X														
4. TP12-6-032514	3/25/14	1400	S	14		X	X													2	
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Ron Belk GEI 3/26/14, 1300
   Received By: Shawn Robinson ALS 3/26/14 12:40
2. Relinquished By:
   Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: 10 Standard | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: ~~5~~ Standard | 3 | 1 | SAME DAY

OTHER:
Specify:

* Turnaround request less than standard may incur Rush Charges

Table 12.1 Guidelines for Reuse of Petroleum-Contaminated Soil

Parameter	Analytical Method	Soil Category (8)(9)(10)			
		1 No detectable Petroleum Components (mg/kg)	2 Commercial Fill Above Water Table (mg/kg)	3 Paving Base Material & Road Construction (mg/kg)	4 Landfill Daily Cover or Asphalt Manufacturing (mg/kg)
Total Petroleum Hydrocarbons (1)(2) See Table 7.1 for petroleum products that fall within these categories.					
Gasoline Range Organics	NWTPH-Gx	<5	5 - 30	>30 - 100	>100
Diesel Range Organics	NWTPH-Dx	<25	25 - 200	>200 - 500	>500
Heavy Fuels and Oils*	NWTPH-Dx	<100	100 - 200	>200 – 500	>500
Mineral Oil	NWTPH-Dx	<100	100 - 200	>200 – 500	>500
Volatile Petroleum Components					
Benzene	SW8260B	<0.005	0.005 - 0.03	0.03 or less	See Table 12.2
Ethyl benzene	SW8260B	<0.005	0.005 - 6	6 or less	>6
Toluene	SW8260B	<0.005	0.005 - 7	7 or less	>7
Xylenes (3)	SW8260B	<0.015	0.015 - 9	9 or less	>9
Fuel Additives & Blending Components					
(MTBE) Methyl Tert-Butyl Ether	SW8260B	<0.005	0.005 - 0.1	0.1 or less	>0.1
Lead	SW6010A	<17	17 - 50	>50 - 220	See Table 12.2
Other Petroleum Components					
Polychlorinated (4) Biphenyls (PCBs)	SW8082	<0.04	<0.04	<0.04	See Table 12.2
Naphthalenes (5)	SW8260B	<0.05	0.05 - 5	5 or less	>5
cPAHs (6)	SW8270C	<0.05	0.05 - 0.1	>0.1 - 2	>2
Other Petroleum Characteristics (Applies to soils contaminated with any petroleum product.)					
Odors	Smell	No detectable odor			
Staining	Visual	No unusual color or staining			
Sheen Test	See Footnote # 7	No visible sheen			

IMPORTANT: See Table 12.2 and the footnotes to this Table on the following pages!

Test soil for the parameters specified in Table 7.2.

****Does NOT include waste oil contaminated soils, which should be disposed of in a landfill.***

"<" means less than; ">" means greater than

Table 12.2 Description and Recommended Best Management Practices for Soil Categories in Table 12.1 (continues on next page)		
Category	**Acceptable Uses**	**Limitations**
Category 1 Soils: Soils with no detectable/ quantifiable levels of petroleum hydrocarbons or constituents using the analytical methods listed in Table 7.3 and are not suspected of being contaminated with any other hazardous substances.	• Can be used anywhere the use is allowed under other regulations. • Any use allowed for Category 2, 3 & 4 soils.	• These soils may have a slight petroleum odor, depending on the sensitivity of individuals, and this should be considered when reusing these soils.
Category 2 Soils: Soils with residual levels of petroleum hydrocarbons that could have adverse impacts on the environment in some circumstances.	• Any use allowed for Category 3 & 4 soils. • Backfill at cleanup sites above the water table. • Fill in commercial or industrial areas above the water table. • Road and bridge embankment construction in areas above the water table.	• Should be placed above the highest anticipated high water table. If seasonal groundwater elevation information is not available, place at least 10 feet above the current water table. • Should not be placed within 100 feet of any private drinking water well or within the 10 year wellhead protection area of a public water supply well. • Should not be placed in or directly adjacent to wetlands or surface water where contact with water is possible. • Should not be placed under a surface water infiltration facility or septic drain field. • Any other limitations in state or local regulations.
Category 3 Soils: Soils with moderate levels of residual petroleum contamination that could have adverse impacts on the environment unless re-used in carefully controlled situations.	• Any use allowed for Category 4 soils. • Use as pavement base material under public and private paved streets and roads. • Use as pavement base material under commercial and industrial parking lots.	• Should be placed above the highest anticipated high water table. If seasonal ground water elevation information is not available, place at least 10 feet above the water table. • Should be a maximum of 2 feet thick to minimize potential for leaching or vapor impacts. • Should not be placed within 100 feet of any private drinking water well or within the 10 year wellhead protection area of a public water supply well. • Should not be placed in or directly adjacent to wetlands or surface water. • Should not be placed under a surface water infiltration facility or septic drain field. • When exposed, runoff from area in use should be contained or treated to prevent entrance to storm drains, surface water or wetlands. • Any other limitations in state or local regulations.

Table 12.2 Description and Recommended Best Management Practices for Soil Categories in Table 12.1 (continued)		
Category	**Acceptable Uses**	**Limitations**
Category 4 Soils: Soils with high levels of petroleum contamination that should not be re-used except in very limited circumstances.	• Use in the manufacture of asphalt. • Use as daily cover in a lined municipal solid waste or limited purpose landfill provided this is allowed under the landfill operating permit.	**Landfill Limitations:** The soil should be tested for and pass the following tests: ➢ Free liquids test. Soils that contain free liquids cannot be landfilled without treatment. ➢ TCLP for lead and benzene. Unless exempt under WAC 173-303-071(3)(t), soils that fail a TCLP for lead or benzene must be disposed of as hazardous waste. ➢ Flammability test. Soils that fail this test must be disposed of as hazardous waste. ➢ Bioassay test under WAC 173-303-100(5). Soils that fail this test must be disposed of as hazardous waste. ➢ PCBs. Soils with a total PCB content of 2 ppm or more must be disposed of as hazardous waste. Soil used for daily cover should be stockpiled within the landfill lined fill area. Soil containing more than 10,000 mg/kg TPH should be buried immediately with other wastes or daily covered to limit potential worker exposure. Any additional limitations specified in the landfill permit or in other state or local regulations. **Asphalt Manufacturing Limitations:** Soil storage areas should be contained in a bermed area to minimize contact with surface water runoff from adjacent areas. Runoff from storage areas should be considered contaminated until tested to prove otherwise. Soil storage areas should also be lined and covered with a roof or secured tarp to minimize contact with precipitation and potential groundwater contamination. Leachate from storage areas should be considered contaminated until tested to prove otherwise. The soil should be tested for and pass the following tests: ➢ TCLP for lead and benzene. Unless exempt under WAC 173-303-071(3)(t), soils that fail a TCLP for lead or benzene must be disposed of as hazardous waste. ➢ Flammability test. Soils that fail this test must be disposed of as hazardous waste. ➢ Bioassay test under WAC 173-303-100(5). Soils that fail this test must be disposed of as hazardous waste. ➢ No detectable levels of PCBs in soil (<0.04 mg/kg). Precautions should be taken to minimize worker exposure to soil storage piles and any dust or vapors from these piles prior to feeding into the asphalt batch plant.
IMPORTANT: See the following page for additional information!		

Notes to Table 12.1:

Contaminated soils can be treated to achieve these concentrations but dilution with clean soil to achieve these concentrations is a violation of Washington State solid and hazardous waste laws.

(1) See Table 7.1 for a description of what products fall within these general categories. If the product released is unknown, use the limitations for gasoline range organics. If the soil is contaminated from releases from more than one product, use the limitations for both products. For example, if the release is a mixture of gasoline and diesel, the soil should be tested for components of both gas and diesel and the limitations for both fuels and their components used.

(2) The concentrations for diesel, heavy oil and mineral oil are not additive. Use the TPH product category most closely representing the TPH mixture and apply the limitations for that product to the mixture. ***The reuse of waste oil contaminated soil is not allowed due to the wide variety of contaminants likely to be present.***

(3) Value is total of m, o, & p xylenes.

(4) Value is the total of all PCBs. Only heavy oil and mineral oil contaminated soils need to be tested for PCBs. Soil contaminated with a spill from a regulated PCB containing device must be disposed of in a TSCA permitted landfill, regardless of the PCB concentration. Other PCB contaminated soils may be disposed of in a municipal solid waste landfill permitted to receive such materials, provided the concentration does not exceed 2 ppm PCBs (WAC 173-303-9904).

(5) Value is total of naphthalene, 1-methyl naphthalene and 2-methyl naphthalene. Only diesel and heavy oil contaminated soils need to be tested for naphthalenes.

(6) The value is the benzo(a)pyrene equivalent concentration of the following seven cPAHs, using the procedures in WAC 173-340-708(8). The seven cPAHs are as follows: benz(a)anthracene; benzo(b)fluoranthene; benzo(k)fluoranthene; benzo(a)pyrene; chrysene; dibenz(a,h)anthracene; and, indeno(1,2,3-cd)pyrene. Only diesel and heavy oil contaminated soils need to be tested for cPAHs. Soils contaminated with more than 1% polycyclic aromatic hydrocarbons, as that term is defined in WAC 173-303-040 (which is more expansive than the above list), must be disposed of as hazardous waste.

(7) No visible sheen observed on water when approximately one tablespoon of soil placed in approximately ½ liter of water held in a shallow pan (like a gold pan or similar container).

(8) A soil in a lower category can be used for uses specified in any higher category. This means that:

- A category 1 soil can be used for any use specified in categories 1, 2, 3 and 4.
- A category 2 soil can be used for any use specified in categories 2, 3 and 4.
- A categories 3 soil can be used for any use specified in categories 3 and 4.

(9) ***If an environmental site assessment or soil or groundwater analyses indicate contaminants other than common petroleum constituents and naturally occurring levels of metals are likely to be present in the soil of interest at the site (for example, solvents or pesticides), do not reuse the soil.*** The soil should instead be treated using appropriate technology to address all contaminants or landfilled at a solid waste or hazardous waste facility permitted to receive these materials.

(10) Soils in categories 2, 3 and 4 should be stockpiled consistent with the soil storage recommendations in Section 11.3 of this guidance.

ATTACHMENT A
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This Attachment 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 Sudden Valley Community Association and their authorized agents. This report may be provided to regulatory agencies for review. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

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

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

This report has been prepared for the Area Z site in Sudden Valley, Whatcom County, 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.

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

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

Reliance Conditions for Third Parties

Our report was prepared for the exclusive use of Sudden Valley Community Association and their authorized agents and regulatory agencies. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with Sudden Valley Community Association and generally accepted environmental practices in this area at the time this report was prepared.

Environmental Regulations Are Always Evolving

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

Uncertainty May Remain after Completion of Soil Sampling Activities

Soil sampling activities 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 Sudden Valley Community Association desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.