Soil and Groundwater Assessment

Former Don Copp Site
400 South 6th Street
Sunnyside, Washington

for
Washington State Department of Ecology

June 26, 2019

GeoEngineers
Earth Science + Technology

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Spokane, Washington 99202
509.363.3125

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Sunnyside, Washington

File No. 0504-162-00

June 26, 2019

Prepared for:

Washington State Department of Ecology
Toxics Cleanup Program – Central Region Office
1250 West Alder Street
Union Gap, Washington 98903-0009

Attention: Jeff Newschwander

Prepared by:

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Table of Contents

1.0 INTRODUCTION

This report describes soil and groundwater assessment activities conducted at the former Don Copp site located at 400 South 6th Street in Sunnyside, Washington (herein referred to as "site"). The approximate site location is shown in the attached Vicinity Map, Figure 1.

Site environmental activities are managed by the Washington State Department of Ecology (Ecology). This report describes field activities, observations and chemical analytical results associated with soil and groundwater samples collected at the site. The purpose of the assessment activities described herein was to identify if remnant soil and groundwater contamination is present beneath the site associated with former underground storage tank (UST) operation. Ecology will use the assessment results to conduct a Site Hazard Assessment (SHA), if necessary, or close to the site.

2.0 SITE DESCRIPTION AND BACKGROUND

The former Don Copp facility is centrally located in Sunnyside, Washington, as shown in Figure 1. The site is currently vacant, and concrete and asphalt from the parking area have been removed. The site is located southeast of the intersection of Decatur Avenue and South 6th Street. We understand that a Papa Murphy's pizza restaurant is planned for development at the site.

One 3,800-gallon and one 1,100-gallon underground storage tanks (USTs) were removed from the southeast portion of the site by PLSA Engineering and Surveying (PLSA) in April 2015 (PLSA 2015). At the time of removal, the 3,800-gallon tank contained about 600 gallons of heating oil and the 1,100-gallon tank contained about 200 gallons of suspected petroleum contaminated water. Soil samples were collected from the bottom of the UST excavations and submitted for chemical analyses of the following contaminants:

- Diesel- and oil-range petroleum hydrocarbons (DRPH and ORPH, respectively);
- Benzene, toluene, ethylbenzene and xylenes (BTEX);
- Polycyclic aromatic hydrocarbons (PAHs);
- Metals (cadmium, chromium, lead, nickel and zinc); and
- Volatile organic compounds (VOCs).

Excavation sample results indicated that DRPH, ORPH, PAHs and naphthalene concentrations greater than the Model Toxics Control Act (MTCA) cleanup levels were present in soil samples collected from beneath the 3,800-gallon UST excavation. Contaminants were either not detected or detected at concentrations less than MTCA cleanup levels in soil samples collected from beneath the 1,100-gallon UST excavation. Soil from confirmation sampling depths was left in place. Groundwater was not encountered in the UST excavations.

3.0 SCOPE OF SERVICES

The scope of services included the following to assess the potential extent of remaining contamination:

1. Prepared a Master Work Plan that included a Sampling and Analysis Plan (SAP), Quality Assurance Project Plan (QAPP), and Health and Safety Plan (HASP).
2. Coordinated underground utility locating using the State of Washington Utility Notification and Utilities Plus, LLC (Utilities Plus). Per state regulations, GeoEngineers mobilized to/from the site from Spokane to mark the proposed boring locations prior to initiating the locate request.
3. Mobilized to/from the site from Spokane, Washington to conduct the sampling event.
4. Conducted 1 day of subsurface assessment using direct-push drilling techniques provided by Environmental West Explorations, Inc. (Environmental West). Five borings were advanced within and around the former UST excavation to depths between 15 and 16 feet below ground surface (bgs) and soil samples were collected from 4-foot intervals using a continuous core sampler for field screening and potential chemical analysis. Soil samples were collected per procedures outlined in the Work Plan.
5. Observed and documented subsurface soil and groundwater conditions using a qualified field engineer or geologist. Field screening consisted of visual observation, water sheen testing and headspace vapor measurements using a photoionization detector (PID).
6. Two borings (DP-1 and DP-2) were advanced about 5 feet below the groundwater interface and temporary groundwater sampling points were installed to collect grab groundwater samples. Groundwater samples were collected from borings where field screening of soil near the groundwater surface indicated the potential for contaminated soil.
7. Measured and recorded the depth to groundwater.
8. Purged and sampled the temporary wells using low-flow sampling techniques. Grab groundwater samples were collected using a peristaltic pump with the tubing inserted into the drill casing. Each grab sample was purged for approximately 15 minutes prior to sampling, allowing for turbidity (analyzed visually) to stabilize.
9. Backfilled borings with bentonite clay and surface completed with gravel.
10. Submitted one soil sample from each boring and one grab groundwater sample from two temporary well points to a qualified laboratory for chemical analysis. The soil sample with the greatest field screening indication of potential contamination or the closest sample collected above the groundwater interface, if present, was submitted for analysis. Soil and groundwater samples submitted from the site were analyzed for the following potential contaminants:
    - DRPH and ORPH using Northwest Method NWTPH-Dx; and
    - PAHs using EPA Method SIM 8270D-SIM.
11. Drummed and labeled investigation-derived waste (IDW). Able Cleanup Technologies (ACT) was retained to transport and dispose the IDW at Waste Management's Graham Road landfill located near Medical Lake, Washington. Based on the chemical analytical results the IDW does not designate as a hazardous waste.
12. Compared soil and groundwater chemical analytical results to MTCA Method A cleanup levels.
13. Prepared this site assessment report summarizing field and laboratory data, comparison of analytical results to MTCA, and provides recommendations.
14. Entered laboratory analytical data results into Ecology's Environmental Information Management (EIM) database.

4.0 FIELD ACTIVITIES

4.1. Direct-Push Soil Assessment

Initial site reconnaissance took place on April 23, 2019 and site access was assessed, and soil borings were marked.

Field assessment activities were conducted on May 2, 2019. Utilities Plus was retained to identify and mark site utilities located near the boring locations (if present) prior to drilling. No utilities were observed near the marked boring locations. Environmental West advanced five borings (GEI012-DP1 through GEI012-DP5) near and within the former UST excavation using direct-push drilling methods. The direct-push boring locations are summarized by the following:

- Soil boring GEI012-DP1 was drilled near the center of the former UST excavation to approximately 16 feet bgs. Two soil samples were collected for potential chemical analysis from the 5.5- to 6-foot and 9- to 9.5-foot-depth intervals. Heavy petroleum sheen was observed and volatile organic vapors were detected at 35 parts per million (ppm) at the 5.5-foot-depth sample interval. Groundwater was encountered at approximately 6½ feet bgs. An extendable, stainless-steel well screen was installed between 5 and 10 feet bgs and a groundwater sample was collected. Petroleum sheens or odors were not observed during groundwater sample collection.
- Soil boring GEI012-DP2 was drilled slightly east of center of the former UST excavation to approximately 16 feet bgs. Two soil samples were collected for potential chemical analysis from the 2- to 2.5-foot and 5- to 5.5-foot-depth intervals. Heavy petroleum sheen was observed and volatile organic vapors were detected at 46 ppm at the 5-foot-depth sample interval. Groundwater was encountered at approximately 7½ feet bgs. An extendable, stainless-steel well screen was installed between 5 and 10 feet bgs and a groundwater sample was collected. Petroleum sheens or odors were not observed during groundwater sample collection.
- Soil boring GEI012-DP3 was drilled south of the former UST excavation to approximately 16 feet bgs. Two soil samples were collected for potential chemical analysis from the 4.5- to 5-foot and 6.5- to 7-foot-depth intervals. Black soil staining was observed near the 5-foot-depth interval, but field screening did not indicate the presence of petroleum hydrocarbons or volatile organic compounds. Wet soils were observed at approximately 8 feet bgs during drilling, but no static groundwater was measurable in the boring. No grab-groundwater sample was collected.
- Soil boring GEI012-DP4 was drilled west of the former UST excavation to approximately 16 feet bgs. Two soil samples were collected for potential chemical analysis from the 0.5- to 1-foot and 9- to 9.5-foot-depth intervals. Field screening did not indicate the presence of petroleum hydrocarbons or volatile organic compounds. Wet soils were observed at approximately 12 feet bgs during drilling, but due to caving of the boring no static groundwater was measured. No grab-groundwater sample was collected.
- Soil boring GEI012-DP5 was drilled north adjacent to the former UST excavation to approximately 16 feet bgs. Two soil samples were collected for potential chemical analysis from the 1- to 1.5-foot and 8- to 8.5-foot-depth intervals. Field screening did not indicate the presence of petroleum hydrocarbons or volatile organic compounds. Groundwater was encountered at approximately 9½ feet bgs but no grab sample was collected because contamination was not observed.

Environmental West backfilled each boring with bentonite and surface completed with gravel. Excess soil cuttings and purge water were placed in 55-gallon steel drums, labeled and placed at a location approved by the property owner (depicted on Site Plan and Exploration Locations, Figure 2). Boring logs associated with the borings are included in Appendix A.

4.2. Subsurface Conditions

Soil observed in GEI012-DP1 through GEI012-DP3 consisted of brown silt with sand and occasional gravel debris, becoming gray to black at approximately 5 feet bgs and underlain by brown silt to the termination of the borings at 16 feet bgs. Soil observed in GEI012-DP4 consisted of brown silt with sand to the termination of the boring at 16 feet bgs with a medium grained sand lens from 5 to 6 feet bgs. Soil observed in GEI012-DP5 consisted of brown silt with sand and occasional gravel to approximately 4 feet bgs and was underlain by brown, fine to medium grained sand with silt to the termination of the boring at 16 feet bgs. Groundwater (including wet soil) was encountered between approximately 6½ to 12 feet bgs.

4.3. Groundwater Sampling

Grab groundwater samples were collected from direct push borings GEI012-DP1 and GEI012-DP2 on May 2, 2019. Depth to groundwater, measured from the ground surface, ranged from approximately 6½ feet (GEI012-DP1) to about 7½ feet bgs (GEI012-DP2).

Temporary well points in GEI012-DP1 and GEI012-DP2 were purged for approximately 15 minutes to allow groundwater and turbidity to stabilize prior to sampling. A peristaltic pump equipped with disposable tubing was used to purge and sample each well. Field methods are described in Appendix A.

Groundwater samples were submitted to TestAmerica for chemical analysis using the methods described in "Section 3.0" and chemical analytical results are discussed in "Section 5.0." Sample locations are shown on Exploration Locations and Chemical Analytical Results, Figure 3.

Purge water generated during groundwater sampling was drummed with the water generated during well development.

5.0 CHEMICAL ANALYTICAL RESULTS

5.1. Soil Chemical Analytical Results

Five initial investigation soil samples were submitted to TestAmerica for the chemical analyses described in "Section 3.0 Scope of Services." TestAmerica's laboratory reports are included in Appendix B; chemical analytical results are summarized and compared to MTCA Method A cleanup levels for unrestricted land use in Table 1 and summarized below.

- Benzo(a)pyrene was detected in samples collected from borings GEI012-DP1 through GEI012-DP3 at concentrations (ranging from 2,700 to 18,000 micrograms per kilogram [µg/kg]) greater than the MTCA Method A cleanup level (100 µg/kg).
- Total naphthalenes (sum of 1-methylnaphthalene, 2-methylnaphthalene and naphthalene concentrations) were detected in samples collected from borings GEI012-DP1 through GEI012-DP3 at concentrations (ranging from 15,800 to 1,510,000 µg/kg) greater than the MTCA Method A cleanup level (5,000 µg/kg).

- Carcinogenic PAHs (cPAHs) toxic equivalency (TEQ) (calculated using toxicity equivalency factors [TEF] from MTCA Table 708-2, based on methodology described in MTCA Cleanup Regulation WAC 173-340-708) was calculated at concentrations greater than the MTCA Method A cleanup level (100 µg/kg) in samples from GEI012-DP1 through GEI012-DP3 (ranging from 3,295 to 21,480 µg/kg).

- DRPH was detected in the samples collected from borings GEI012-DP1 through GEI012-DP3 at concentrations (ranging from 6,500 to 46,000 micrograms per kilogram [mg/kg]) greater than the MTCA Method A cleanup level (2,000 mg/kg).
- ORPH was detected in the samples collected from borings GEI012-DP1 through GEI012-DP3 at concentrations (ranging from 4,800 to 87,000 mg/kg) greater than the MTCA Method A cleanup level (2,000 mg/kg).
- DRPH, ORPH, PAHs and cPAHs were either not detected or detected at concentrations less than MTCA Method A cleanup levels in samples from GEI012-DP4 and GEI012-DP5.

5.2. Groundwater Chemical Analytical Results

Two grab groundwater samples were collected from borings GEI012-DP1 and GEI012-DP2 and were submitted to TestAmerica for the chemical analyses described in "Section 3.0 Scope of Services." TestAmerica's laboratory report is included in Appendix B; chemical analytical results are summarized and compared to MTCA Method A cleanup levels in Table 2 and summarized below.

- DRPH was detected in samples collected from GEI012-DP1 and GEI012-DP2 (0.67 and 2.7 micrograms per liter [µg/L], respectively) at concentrations greater than the MTCA Method A cleanup level (0.5 µg/L).
- ORPH was not detected in either groundwater sample.
- Total naphthalenes (sum of 1-methylnaphthalene, 2-methylnaphthalene and naphthalene concentrations) were detected in samples collected from GEI012-DP1 and GEI012-DP2 at concentrations less than the MTCA Method A cleanup level (160 µg/L).
- Several other PAHs were either not detected or detected at concentrations less than MTCA Method A cleanup levels; cPAHs were not detected in either sample.

6.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Soil and groundwater assessment activities were conducted on May 2, 2019, at the former Don Copp site located at 400 South 6th Street, in Sunnyside, Washington.

Five soil samples were submitted for PAHs, DRPH and ORPH analysis. DRPH, ORPH, cPAH TEQ, total naphthalene and benzo(a)pyrene concentrations were detected exceeding the MTCA Method A cleanup levels in borings GEI012-DP1 through GEI012-DP3. These borings are located either within the former UST excavation area (GEI012-DP1 and GEI012-DP2) or directly south of the former UST excavation (GEI012-DP3). PAHs, DRPH and ORPH were either not detected or were detected at concentrations less than MTCA Method A cleanup levels in the soil samples from borings GEI012-DP4 and GEI012-DP5.

Two grab groundwater samples were collected from borings GEI012-DP1 and GEI012-DP2 were submitted for DRPH, ORPH and PAHs analysis. DRPH was detected at concentrations exceeding the MTCA Method A

cleanup level in the groundwater samples collected from borings GEI012-DP1 and GEI012-DP2. ORPH was not detected. Total naphthalene was detected in samples collected from GEI012-DP1 and GEI012-DP2 at concentrations less than the MTCA Method A cleanup level.

Based on the chemical analytical results, we recommend Ecology install groundwater monitoring wells to assess groundwater flow direction and contaminant concentration. We also recommend that a licensed surveyor will be retained to survey the elevations and locations of the monitoring wells once completed.

ACT picked up the IDW on June 18, 2019 for transport to and disposal at Waste Management's Graham Road landfill. The accumulated IDW amounted to two, 55-gallon drums.

7.0 LIMITATIONS

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

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

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

8.0 REFERENCES

PLSA Engineering & Surveying. Underground Storage Tank Decommissioning – Site Assessment Report, August 3, 2015. Sunnyside, Washington 98944.

TABLES

GeoEngineers

Table 1

Summary Chemical Analytical Results - Soil[1]

Former Don Copp Facility
Sunnyside, Washington

			Location ID	GEI012-DP1		GEI012-DP2		GEI012-DP3		GEI012-DP4		GEI012-DP5	
			Sample Date	5/2/2019		5/2/2019		5/2/2019		5/2/2019		5/2/2019	
			Sample Depth (bgs)	5.5 - 6.0		2.0 - 2.5		4.5 - 5.0		9.0 - 9.5		8.0 - 8.5	
Method	**Analyte**	**Units**	**MTCA Method A Unrestricted CULs[6]**										
NWTPH-Dx[2]	DRPH	mg/kg	2,000	**6,500**		**41,000**		**46,000**		**12**	U	12	U
	ORPH	mg/kg	2,000	**4,800**		**28,000**		**87,000**		30	U	31	U
PAHs[3]	1-Methylnaphthalene	µg/kg	5,000[7]	**99,000**	J	**460,000**		**11,000**		12	U	12	U
	2-Methylnaphthalene	µg/kg		**160,000**	J	**880,000**		**2,600**		12	U	12	U
	Naphthalene	µg/kg		**20,000**		**170,000**		**2,200**		12	U	12	U
	Acenaphthene	µg/kg	NE	**14,000**	J	**140,000**		**20,000**		12	U	12	U
	Acenaphthylene	µg/kg	NE	**1,700**	J	**10,000**		**2,100**		12	U	12	U
	Anthracene	µg/kg	NE	**7,300**	J	**27,000**		**14,000**		12	U	12	U
	Benzo(a)anthracene	µg/kg	NE	**3,900**	J	**15,000**		**20,000**		12	U	12	U
	Benzo(a)pyrene	µg/kg	100	**2,700**	J	**8,000**		**18,000**		12	U	12	U
	Benzo(b)fluoranthene	µg/kg	NE	**990**	J	4,500	U	**7,100**		**13**		**16**	
	Benzo(g,h,i)perylene	µg/kg	NE	**620**	J	4,500	U	**6,700**		12	U	12	U
	Benzo(k)fluoranthene	µg/kg	NE	**140**		4,500	U	1,500	U	12	U	12	U
	Chrysene	µg/kg	NE	**5,800**	J	**21,000**		**24,000**		12	U	12	U
	Dibenzo(a,h)anthracene	µg/kg	NE	**170**		4,500	U	**1,800**		12	U	12	U
	Fluoranthene	µg/kg	NE	**1,500**	J	**5,400**		**7,600**		12	U	**14**	
	Fluorene	µg/kg	NE	**9,100**	J	**33,000**		**7,500**		12	U	12	U
	Indeno(1,2,3-c,d)pyrene	µg/kg	NE	**170**		**4,500**	U	**2,000**		12	U	12	U
	Phenanthrene	µg/kg	NE	**33,000**	J	**130,000**		**28,000**		12	U	12	U
	Pyrene	µg/kg	NE	**13,000**	J	**52,000**		**97,000**		12	U	**14**	
	Total cPAH TEQ (ND=0.5RL)[4,5]	µg/kg	100	**3,295**	J	**11,510**		**21,480**		**10**		**10**	

Notes

[1]Samples analyzed by Eurofins TestAmerica Laboratories, Inc. located in Spokane Valley, Washington.

[2]Diesel- and oil-range petroleum hydrocarbons (DRPH and ORPH, respectively) analyzed using Northwest Method NWTPH-Dx.

[3]Polycyclic aromatic hydrocarbons (PAHs) analyzed using EPA Method 8270D-SIM.

[4]Carcinogenic PAH (cPAH) toxic equivalency (TEQ) calculated using toxicity equivalency factors (TEF) from MTCA Table 708-2, based on methodology described in Model Toxics Control Act (MTCA) Cleanup Regulation WAC 173-340-708.

[5]The TEQ reported was calculated using half the laboratory reporting limits for cPAHs detected at concentrations less than the laboratory reporting limits.

[6]MTCA Method A unrestricted land use cleanup levels (CUL).

[7]The CUL is based on the sum of total naphthalenes.

mg/kg = milligrams per kilogram; µg/kg = micrograms per kilogram; NE = not established; -- = sample not analyzed

U = analyte was not detected above the laboratory reporting limit; J = estimated result

Bold indicates analyte was detected.

Grey shading indicates analyte was detected at concentrations greater than MTCA Method A CULs.

Table 2

Summary Chemical Analytical Results - Groundwater[1]

Former Don Copp Facility
Sunnyside, Washington

			Location ID	GEI012-DP1:050219		GEI012-DP2:050219	
			Sample Date	5/2/2019		5/2/2019	
Method	**Analyte**	**Units**	**MTCA Method A CULs[4]**				
NWTPH-Dx[2]	Diesel-Range Hydrocarbons	mg/L	0.5	**0.67**	J	**2.7**	J
	Oil-Range Hydrocarbons	mg/L	0.5	0.38	U	0.39	U
PAHs[3]	1-Methylnaphthalene	µg/L	160[5]	**22**		**19**	
	2-Methylnaphthalene	µg/L		**30**		**24**	
	Naphthalene	µg/L		**10**		**20**	
	Acenaphthene	µg/L	NE	**1.5**		**1.3**	
	Acenaphthylene	µg/L	NE	**0.25**		**0.23**	
	Anthracene	µg/L	NE	**0.22**		**0.20**	
	Benzo(a)anthracene	µg/L	NE	0.083	U	0.086	U
	Benzo(a)pyrene	µg/L	0.1	0.083	U	0.086	U
	Benzo(b)fluoranthene	µg/L	NE	0.083	U	0.086	U
	Benzo(g,h,i)perylene	µg/L	NE	0.083	U	0.086	U
	Benzo(k)fluoranthene	µg/L	NE	0.083	U	0.086	U
	Chrysene	µg/L	NE	0.083	U	0.086	U
	Dibenzo(a,h)anthracene	µg/L	NE	0.083	U	0.086	U
	Fluoranthene	µg/L	NE	0.083	U	0.086	U
	Fluorene	µg/L	NE	**1.1**		**0.8**	
	Indeno(1,2,3-c,d)pyrene	µg/L	NE	0.083	U	0.086	U
	Phenanthrene	µg/L	NE	**1.6**		**1.2**	
	Pyrene	µg/L	NE	**0.12**		**0.10**	

Notes

[1]Samples analyzed by Eurofins TestAmerica Laboratories, Inc. located in Spokane Valley, Washington.

[2]Diesel- and lube-oil-range hydrocarbons analyzed using NWTPH-Dx.

[3]Polycyclic aromatic hydrocarbons (PAHs) analyzed using EPA Method 8270D-SIM.

[4]MTCA Method A cleanup levels (CUL).

[5]The CUL is based on the sum of total naphthalenes.

mg/L = milligrams per liter; µg/L = micrograms per liter; NE = not established;

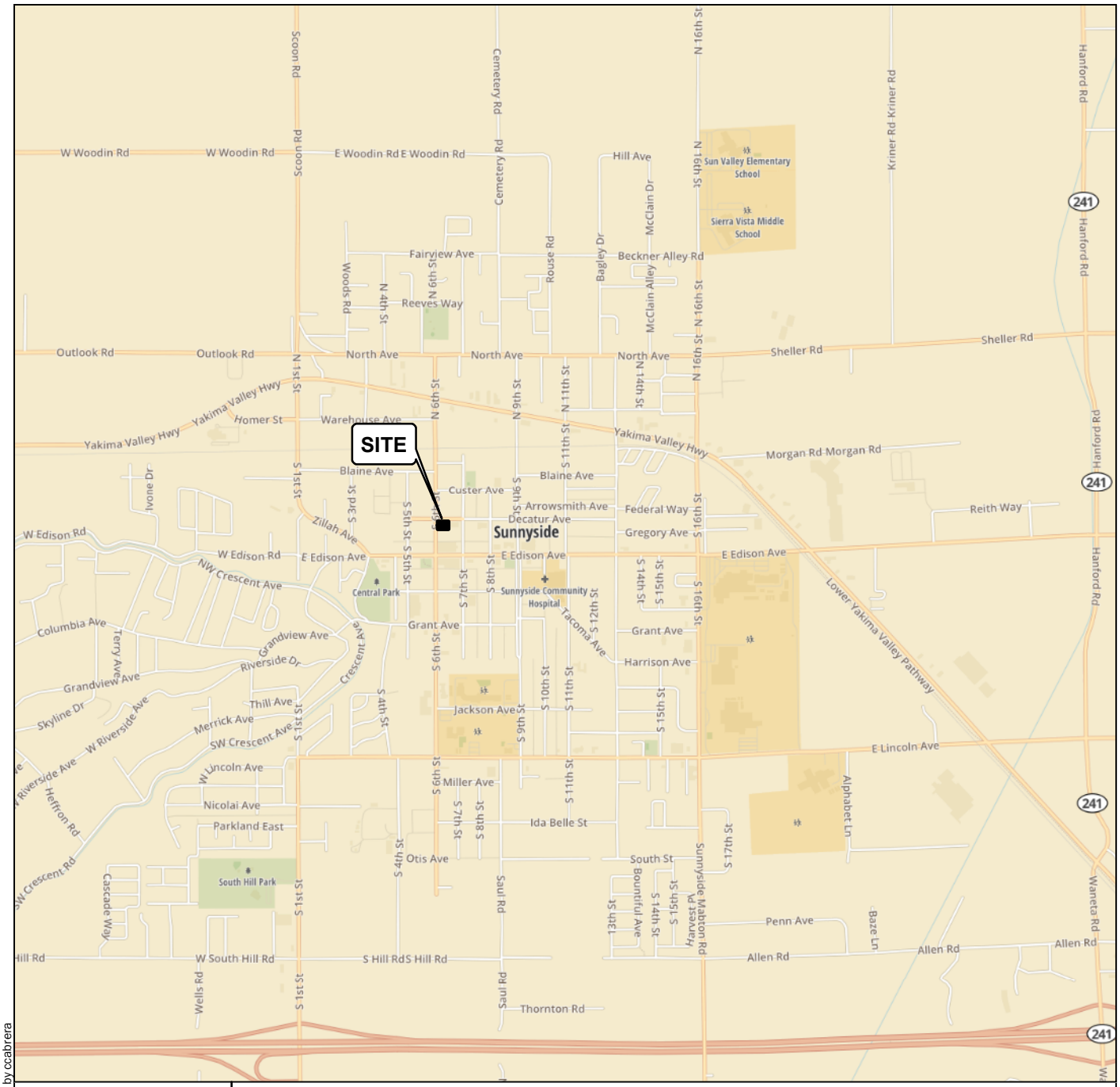
U = analyte was not detected above the laboratory reporting limit; J = estimated result

Bold indicates analyte was detected.

Grey shading indicates analyte was detected at concentrations greater than MTCA Method A CULs.

FIGURES

GeoEngineers



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Feet

Notes:

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Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

Vicinity Map

Former Don Copp Facility
Sunnyside, Washington

GeoEngineers

Figure 1

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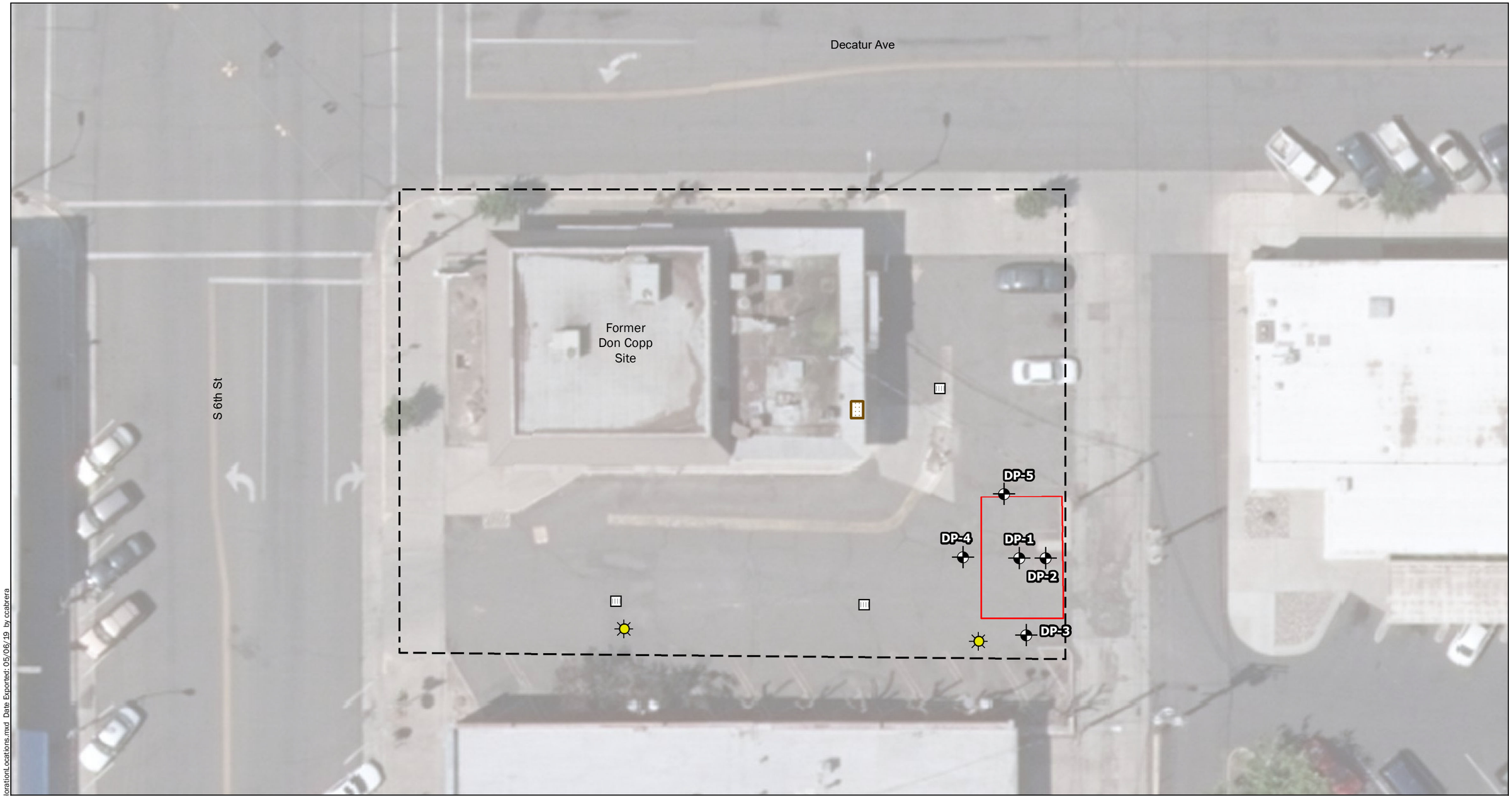

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Data Source: Clarity, ESRI.
Site boundary and street data from Yakima County parcel data, January 2019.
Wells and site features from Fulcrum Environmental, June 2013.

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

- Direct Push Boring Number and Approximate Location
- Drain Approximate Location
- Light Approximate Location
- IDW Storage Area
- Former UST Basin Approximate Location
- Site Boundary

N W E S

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Feet

Site Plan and Exploration Locations

Former Don Copp Facility
Sunnyside, Washington

GeoEngineers

Figure 2

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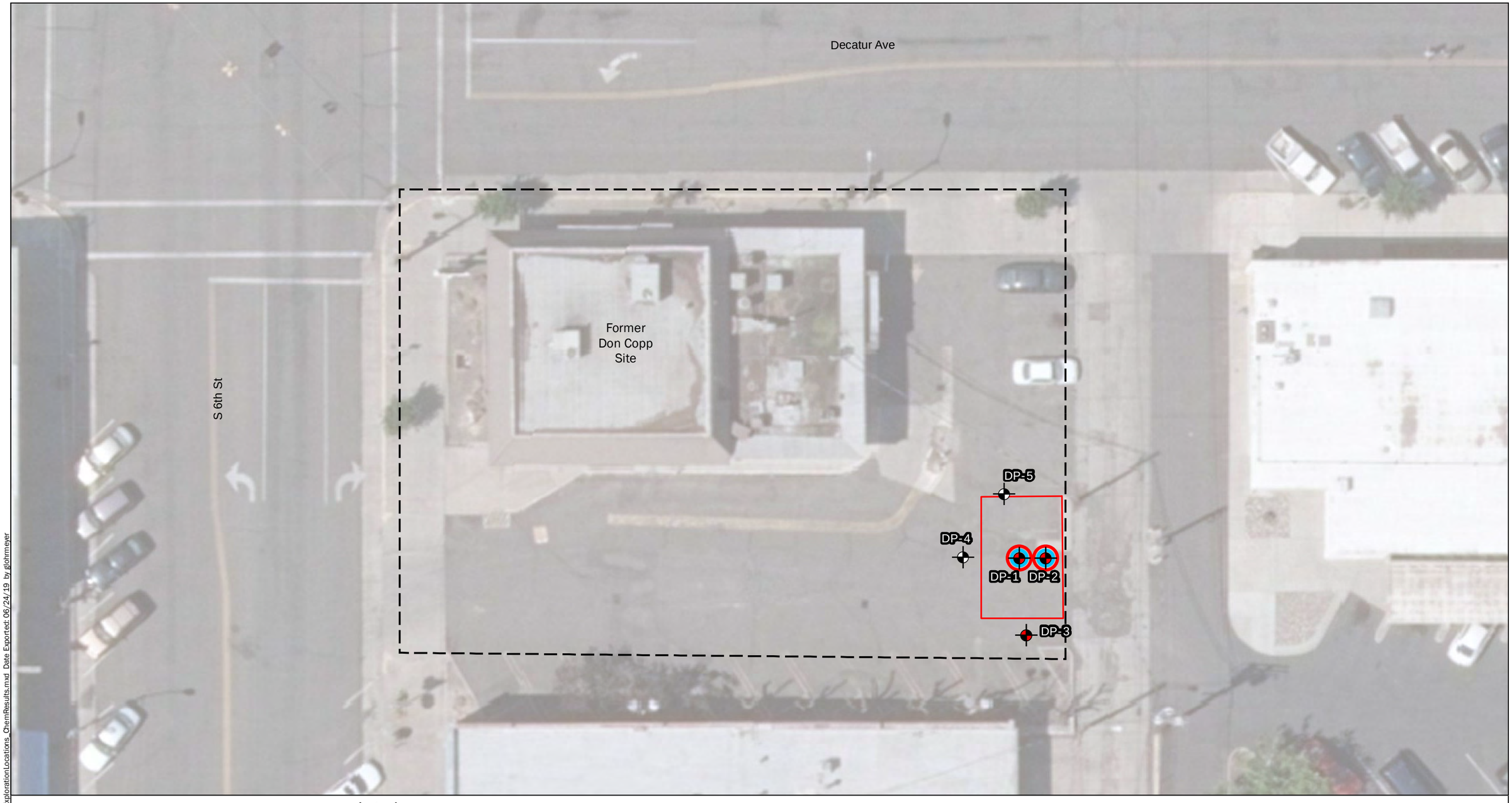

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Data Source: Clarity, ESRI.
Site boundary and street data from Yakima County parcel data, January 2019.
Wells and site features from Fulcrum Environmental, June 2013.

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

- Direct Push Boring Number and Approximate Location
- Boring with Contaminants in Soil >MTCA Method A Unrestricted Land Use Cleanup Levels
- Direct Push Boring Where Grab Groundwater Sample Was Collected
- Direct Push Boring with Diesel-Range Petroleum Hydrocarbons in Groundwater Greater Than MTCA Method A Unrestricted Land Use Cleanup Level
- Former UST Basin Approximate Location
- Site Boundary

N W E S

20 0 20
Feet

Exploration Locations and Chemical Analytical Results

Former Don Copp Facility
Sunnyside, Washington

GeoEngineers

Figure 3

Former UST and boring locations (view looking south).

Advancing boring location GEI012-DP1 (view looking east)

Site Photographs – May 2, 2019	
Former Don Copp Site Sunnyside, Washington	
GeoEngineers	Figure 4

2831-088-00 6/5/15 mb

Collecting grab groundwater sample from GEI012-DP2 (view looking southeast).

Advancing GEI012-DP4 (view looking south)

Site Photographs – May 2, 2019	
Former Don Copp Site Sunnyside, Washington	
GeoEngineers	Figure 5

2831-088-00 6/5/15 mb

APPENDICES

GeoEngineers

APPENDIX A
Field Procedures and Boring Logs

APPENDIX A
FIELD PROCEDURES AND BORING LOGS

General

Subsurface conditions at the former Don Copp site were explored on May 2, 2019, by advancing five direct-push borings at the approximate locations shown on Figure 2. The borings were advanced to approximately 16 feet below existing site grade using a direct-push drill rig. Boring locations were established in the field using a site plan and measurements from on-site structures. Consequently, exploration locations should be considered accurate to the degree implied by the method used.

Field methods generally were performed in compliance with the project Work Plan assessment procedures.

Soil Sample Collection

Soil samples obtained during direct-push drilling were removed from the sleeve using clean nitrile gloves, and transferred into a laboratory prepared container, labeled with a waterproof pen, and placed on wet ice in a clean plastic-lined cooler.

Drilling operations were observed by GeoEngineers staff who examined and classified the soil encountered, obtained soil samples, and maintained a continuous exploration log. Soil encountered in the borings was classified in general accordance with ASTM International (ASTM) D 2488 and the classification chart listed in Key to Exploration Logs, Figure A-1. Boring logs are presented in Figures A-2 through A-6. The logs are based on field data interpretation and indicate the depth at which subsurface materials, or their characteristics change, although these changes might actually be gradual.

Field Screening of Soil Samples

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

PID screening involves placing soil in a container and after agitating or warming, measuring total volatile organic compounds in the available head space. Visual screening consists of observing soil for stains indicative of metal- or petroleum-related contamination. Water-sheen screening involved placing soil in a pan of water and observing the water surface for signs of sheen. Sheen screening may detect both volatile and nonvolatile petroleum hydrocarbons. Sheens observed are classified as follows:

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

Field screening results can be site specific. The effectiveness of field screening can vary with temperature, moisture content, organic content, soil type, and contaminant type and age.

Groundwater Sampling Procedures

Grab groundwater samples were collected from borings GEI012-DP1 and GEI012-DP2 on May 2, 2019.

Groundwater Depths

Depths to groundwater were measured relative to the ground surface using an electric water-level indicator. The probe of the water-level indicator was decontaminated between wells with a detergent wash, followed by two distilled water rinses.

Grab Groundwater Samples

Grab groundwater samples were collected using a peristaltic pump with the tubing inserted into the drill casing. Each grab sample was purged about 15 minutes before sampling and allowing for turbidity (analyzed visually) to stabilize. Groundwater quality parameters (including pH, conductivity, temperature, turbidity, ORP and DO) were not measured due to a malfunctioning multi-parameter meter. Samples were collected in laboratory supplied sample containers.

SOIL CLASSIFICATION CHART

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

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

ADDITIONAL MATERIAL SYMBOLS

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

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Continuous Coring

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

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

"WOH" indicates sampler pushed using the weight of the hammer.

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

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

Key to Exploration Logs

GeoEngineers

Figure A-1

Drilled Start 5/2/2019 End 5/2/2019	Total Depth (ft) 16	Logged By JML Checked By SHL	Driller Environmental West Exploration	Drilling Method Direct Push	
Surface Elevation (ft) Vertical Datum	Undetermined NAVD88	Hammer Data	N/A	Drilling Equipment	Geoprobe 5400
Easting (X) Northing (Y)	1763632.823098 361931.964575	System Datum	WA State Plane South NAD83 (feet)	See "Remarks" section for groundwater observed	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		24					ML	Brown silt with sand (soft, moist)			
										NS	0.1	
			34									
	5					GEI012-DP1 (5.5-6) CA			Grades to gray	HS	35	Groundwater observed at 6½ feet bgs at time of drilling
			29									
						GEI012-DP1 (9-9.5)				HS	30	
	10											
			30									
										NS	15	
									Brown silt with trace clay			
	15											

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring GEI012-DP1

GeoEngineers

Project: Former Don Copp Facility
Project Location: Sunnyside, Washington
Project Number: 0504-162-00

Figure A-2
Sheet 1 of 1

Drilled Start 5/2/2019 End 5/2/2019	Total Depth (ft) 16	Logged By JML Checked By SHL	Driller Environmental West Exploration	Drilling Method Direct Push	
Surface Elevation (ft) Undetermined Vertical Datum NAVD88		Hammer Data N/A		Drilling Equipment Geoprobe 5400	
Easting (X) 1763638.361145 Northing (Y) 361931.964575		System Datum WA State Plane South NAD83 (feet)		See "Remarks" section for groundwater observed	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		30					ML	Brown silt with sand, occasional gravel and debris (loose, moist) (fill)	NS	0.1	
						GEI012-DP2 (2-2.5) CA						
			38						Grades to gray silt with sand (medium stiff, moist)			
	5					GEI012-DP2 (5-5.5)				HS	46	
										HS	40	
			48									Groundwater encountered at approximately 7½ feet below ground surface at time of drilling
										HS	14	
	10								Grades to brown silt (medium stiff, moist)			
			48							NS	8	
	15											

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring GEI012-DP2

GeoEngineers

Project: Former Don Copp Facility
Project Location: Sunnyside, Washington
Project Number: 0504-162-00

Figure A-3
Sheet 1 of 1

Drilled Start 5/2/2019 End 5/2/2019	Total Depth (ft) 16	Logged By JML Checked By SHL	Driller Environmental West Exploration	Drilling Method Direct Push	
Surface Elevation (ft) Vertical Datum Undetermined NAVD88		Hammer Data N/A		Drilling Equipment Geoprobe 5400	
Easting (X) 1763634.259775 Northing (Y) 361915.803518		System Datum WA State Plane South NAD83 (feet)		Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		20					ML	Brown silt with sand and trace organic matter (medium stiff, moist) (fill)	NS	0.0	
			38			GEI012-DP3 (4.5-5) CA				NS	0.1	Black staining
	5					GEI012-DP3 (6.5-7) CA						
			48						Grades to brown silt with sand (medium stiff, wet)	NS	0.5	
	10									NS	0.3	
			46							NS	0.7	
	15									NS	0.1	

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

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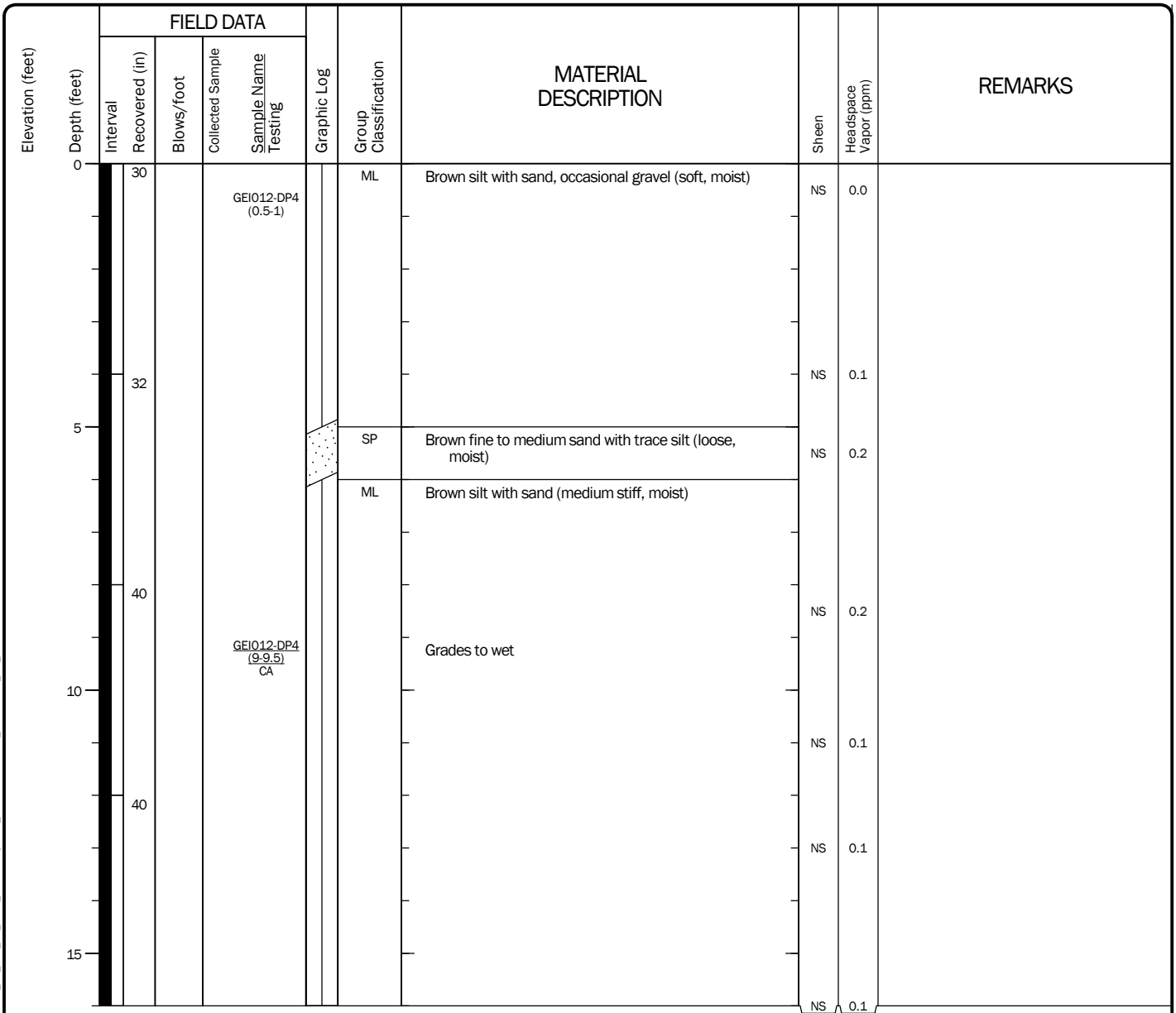
Log of Boring GEI012-DP3

GeoEngineers

Project: Former Don Copp Facility
Project Location: Sunnyside, Washington
Project Number: 0504-162-00

Figure A-4
Sheet 1 of 1

Drilled Start 5/2/2019 End 5/2/2019	Total Depth (ft) 16	Logged By JML Checked By SHL	Driller Environmental West Exploration	Drilling Method Direct Push	
Surface Elevation (ft) Vertical Datum Undetermined NAVD88	Hammer Data N/A	Drilling Equipment Geoprobe 5400			
Easting (X) 1763621.011114 Northing (Y) 361932.169955	System Datum WA State Plane South NAD83 (feet)	Groundwater not observed at time of exploration			
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring GEI012-DP4

GeoEngineers

Project: Former Don Copp Facility
Project Location: Sunnyside, Washington
Project Number: 0504-162-00

Figure A-5
Sheet 1 of 1

Drilled	Start 5/2/2019	End 5/2/2019	Total Depth (ft)	16	Logged By / Checked By	JML / SHL	Driller	Environmental West Exploration	Drilling Method	Direct Push
Surface Elevation (ft) Vertical Datum		Undetermined NAVD88			Hammer Data	N/A			Drilling Equipment	Geoprobe 5400
Easting (X) Northing (Y)		1763629.60132 361945.418944			System Datum	WA State Plane South NAD83 (feet)			See "Remarks" section for groundwater observed	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		22			GEI012-DP5 (1-1.5)		ML	Brown silt with sand and occasional gravel (medium stiff, moist) (fill)	NS	0.1	
			30					SP-SM	Brown fine to medium sand with silt (medium dense, moist) (fill)	NS	0.1	
	5									NS	0.0	
			36			GEI012-DP5 (8-8.5) CA			Occasional gravel observed	NS	0.1	
	10											Groundwater encountered at approximately 9½ feet below ground surface at time of drilling
			36							NS	0.1	
										NS	0.2	
	15											

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring GEI012-DP5

GeoEngineers

Project: Former Don Copp Facility
Project Location: Sunnyside, Washington
Project Number: 0504-162-00

Figure A-6
Sheet 1 of 1

APPENDIX B
Chemical Analytical Laboratory Reports

APPENDIX B
CHEMICAL ANALYTICAL LABORATORY REPORT AND DATA VALIDATION REPORT

This report documents the results of a United States Environmental Protection Agency (EPA)-defined Stage 2A data validation (EPA Document 540-R-08-005; EPA 2009) of analytical data from the analyses of soil and groundwater samples collected as part of the May 2019 sampling event, and the associated laboratory quality control (QC) samples. The samples were obtained from the former Don Copp (Future Papa Murphy's) site located at 400 South 6th Street in Sunnyside, Washington.

OBJECTIVE AND QUALITY CONTROL ELEMENTS

GeoEngineers, Inc. (GeoEngineers) completed the data validation consistent with the EPA Contract Laboratory Program National Functional Guidelines for Organic Superfund Methods Data Review (EPA 2017) (National Functional Guidelines) to determine if the laboratory analytical results meet the project objectives and are usable for their intended purpose. Data usability was assessed by determining if:

- The samples were analyzed using well-defined and acceptable methods that provide reporting limits below applicable regulatory criteria;
- The precision and accuracy of the data are well-defined and sufficient to provide defensible data; and
- The quality assurance/quality control (QA/QC) procedures utilized by the laboratory meet acceptable industry practices and standards.

In accordance with the Quality Assurance Project Plan (QAPP), Appendix B of the Work Plan (GeoEngineers 2019), the data validation included review of the following QC elements:

- Data Package Completeness
- Chain-of-Custody Documentation
- Holding Times and Sample Preservation
- Surrogate Recoveries
- Method Blanks
- Matrix Spikes/Matrix Spike Duplicates
- Laboratory Control Samples/Laboratory Control Sample Duplicates
- Miscellaneous

VALIDATED SAMPLE DELIVERY GROUPS

This data validation included review of the sample delivery group (SDG) listed below in Table B-1.

TABLE B-1. SUMMARY OF VALIDATED SAMPLE DELIVERY GROUPS

Laboratory SDG	Samples Validated
590-10919-1	GEI 012-DP1(5.5-6), GEI 012-DP1:050219, GEI 012-DP2(5-5.5), GEI 012-DP2:050219, GEI 012-DP3(4.5-5), GEI 012-DP4(9-9.5), GEI 012-DP5(8-8.5)

CHEMICAL ANALYSIS PERFORMED

Eurofins TestAmerica Laboratories, Inc. (TestAmerica), located in Spokane, Washington, performed laboratory analyses on the samples using the following methods:

- Petroleum Hydrocarbons (NWTPH-Dx) by Method NWTPH-Dx; and
- Polycyclic Aromatic Hydrocarbons (PAHs) by Method SW8270D-SIM

DATA VALIDATION SUMMARY

The results for each of the QC elements are summarized below.

Data Package Completeness

TestAmerica provided the required deliverables for the data validation according to the National Functional Guidelines. The laboratory followed adequate corrective action processes and the identified anomalies were discussed in the relevant laboratory case narrative.

Chain-of-Custody Documentation

Chain-of-custody (COC) forms were provided with the laboratory analytical reports. The COCs were accurate and complete when submitted to the laboratory.

Holding Times and Sample Preservation

The sample holding time is defined as the time that elapses between sample collection and sample analysis. Maximum holding time criteria exist for each analysis to help ensure that the analyte concentrations found at the time of analysis reflect the concentration present at the time of sample collection. Established holding times were met for each analysis. The sample cooler arrived at the laboratory outside the appropriate temperatures of between 2 and 6 degrees Celsius. The out-of-compliance cooler temperature is detailed below.

SDG 590-10919-1: One sample cooler temperature recorded at the laboratory was 7.8 degrees Celsius. The samples were collected on 5/2/2019, kept on ice during sampling, and stored in GeoEngineers field refrigerator until 5/3/2019. On 5/3/2019, the samples were placed in a cooler on ice and relinquished to the laboratory. It was determined through professional judgment that since the samples were stored in the GeoEngineers field refrigerator until the day they were relinquished on ice to the laboratory, this temperature is likely isolated to the time between transit and being relinquished and should not affect the sample analytical results.

Surrogate Recoveries

A surrogate compound is a compound that is chemically similar to the organic analytes of interest, but unlikely to be found in an environmental sample. Surrogates are used for organic analyses and are added to the samples, standards, and blanks to serve as an accuracy and specificity check of each analysis. The surrogates are added to the samples at a known concentration and percent recoveries are calculated following analysis. The surrogate percent recoveries for field samples were within the laboratory control limits, with the following exceptions:

SDG 590-10919-1: (NWTPH-Dx) The percent recoveries for surrogate o-Terphenyl were outside the control limits in Samples GEI 012-DP1(5.5-6), GEI 012-DP2(5-5.5), and GEI 012-DP3(4.5-5), because of sample dilution (10X, 20X, and 40X, depending on the sample). The surrogates are added to the sample when it is extracted. If the sample is diluted 10X or more, recovery of the surrogates is often not possible because it is also diluted below the linear calibration range of the instrument. No action was required for these outliers.

The percent recovery for surrogate o-Terphenyl was greater than the control limits in Sample GEI 012-DP2:050219. The positive result for diesel-range hydrocarbons was qualified as estimated (J) in this sample.

(PAHs) The percent recoveries for surrogates 2-Fluorobiphenyl and nitrobenzene-d5 were outside the control limits in Samples GEI 012-DP1(5.5-6), GEI 012-DP2(5-5.5), and GEI 012-DP3(4.5-5), because of sample dilution (10X, 20X, 40X, 100X and 400X, depending on the sample). The surrogates are added to the sample when it is extracted. If the sample is diluted 10X or more, recovery of the surrogates is often not possible because it is also diluted below the linear calibration range of the instrument. No action was required for these outliers.

Method Blanks

Method blanks are analyzed to ensure that laboratory procedures and reagents do not introduce measurable concentrations of the analytes of interest. A method blank was analyzed with each batch of samples, at a frequency of 1 per 20 samples. For each sample batch, method blanks for the applicable methods were analyzed at the required frequency. None of the analytes of interest were detected in the method blanks.

Matrix Spikes/Matrix Spike Duplicates

Since the actual analyte concentration in an environmental sample is not known, the accuracy of a particular analysis is usually inferred by performing a matrix spike (MS) analysis on one sample from the associated batch, known as the parent sample. One aliquot of the sample is analyzed in the normal manner and then a second aliquot of the sample is spiked with a known amount of analyte concentration and analyzed. From these analyses, a percent recovery is calculated. Matrix spike duplicate (MSD) analyses are generally performed for organic analyses as a precision check and analyzed in the same sequence as a matrix spike. Using the result values from the MS and MSD, the relative percent difference (RPD) is calculated. The percent recovery control limits for MS and MSD analyses are specified in the laboratory documents, as are the RPD control limits for MS/MSD sample sets.

One MS/MSD analysis should be performed for every analytical batch or every 20 field samples, whichever is more frequent. The frequency requirements were met for each analysis and the percent recovery and RPD values were within the proper control limits, with the following exceptions:

SDG 590-10919-1: (PAHs) The laboratory performed an MS/MSD sample set on Sample GEI 012-DP1(5.5-6). The percent recoveries and/or RPD values for 1-Methylnaphthalene, 2-Methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, fluoranthene, fluorene, phenanthrene, and pyrene were outside than the control limits in the MS/MSD sample set extracted on May 12, 2019. The positive results for these target analytes were qualified as estimated (J) in this sample.

Laboratory Control Samples/Laboratory Control Sample Duplicates

A laboratory control sample (LCS) is a blank sample that is spiked with a known amount of analyte and then analyzed. An LCS is similar to an MS, but without the possibility of matrix interference. Given that matrix interference is not an issue, the LCS/LCSD control limits for accuracy and precision are usually more rigorous than for MS/MSD analyses. Additionally, data qualification based on LCS/LCSD analyses would apply to all samples in the associated batch, instead of just the parent sample. The percent recovery control limits for LCS and LCSD analyses are specified in the laboratory documents, as are the RPD control limits for LCS/LCSD sample sets.

One LCS/LCSD analysis should be performed for every analytical batch or every 20 field samples, whichever is more frequent. The frequency requirements were met for all analyses and the percent recovery and RPD values were within the proper control limits.

MISCELLANEOUS

SDG 590-10919-1: (NWTPH-Dx) The laboratory noted that positive result for diesel-range hydrocarbons in Sample GEI 012-DP1:050219 appeared to be due to heavily weathered gasoline, as well as possible weathered diesel, which may bias the reported sample concentration. For this reason, the positive result for diesel-range hydrocarbons was qualified as estimated (J) in this sample.

The laboratory noted that positive result for diesel-range hydrocarbons in Sample GEI 012-DP2:050219 appeared to be due to weathered diesel, which may bias the reported sample concentration. For this reason, the positive result for diesel-range hydrocarbons was qualified as estimated (J) in this sample.

OVERALL ASSESSMENT

As was determined by this data validation, the laboratory followed the specified analytical methods. Accuracy was acceptable, as demonstrated by the surrogate, LCS/LCSD, and MS/MSD percent recovery values, with the exceptions noted above. Precision was acceptable, as demonstrated by the LCS/LCSD and MS/MSD RPD values, with the exceptions noted above.

The data are acceptable for the intended use, with the following qualifications listed below in Table B-2.

TABLE B-2. SUMMARY OF QUALIFIED SAMPLES

Sample ID	Analyte	Qualifier	Reason
GEI 012-DP1(5.5-6)	1-Methylnaphthalene	J	MS/MSD Recovery and RPD
	2-Methylnaphthalene	J	MS/MSD Recovery and RPD
	Acenaphthene	J	MS/MSD Recovery and RPD
	Acenaphthylene	J	MS/MSD RPD
	Anthracene	J	MS/MSD Recovery and RPD
	Benzo(a)anthracene	J	MS/MSD RPD
	Benzo(a)pyrene	J	MS/MSD RPD
	Benzo(b)fluoranthene	J	MS/MSD RPD
	Benzo(g,h,i)perylene	J	MS/MSD Recovery and RPD
	Chrysene	J	MS/MSD Recovery and RPD
	Fluoranthene	J	MS/MSD RPD
	Fluorene	J	MS/MSD Recovery and RPD
	Phenanthrene	J	MS/MSD Recovery and RPD
	Pyrene	J	MS/MSD Recovery and RPD
GEI 012-DP1:050219	Diesel-range hydrocarbons	J	See Miscellaneous
GEI 012-DP2:050219	Diesel-range hydrocarbons	J	Surrogate Recovery/See Miscellaneous

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GeoEngineers, Inc. (GeoEngineers). 2019. "Work Plan, Don Copp Site," prepared for Washington State Department of Ecology. April 23, 2019.

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U.S. Environmental Protection Agency (EPA). 2017. "Contract Laboratory Program National Functional Guidelines for Organic Superfund Methods Data Review," EPA-540-R-2017-002. January 2017.

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

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Tel: (509)924-9200

Laboratory Job ID: 590-10919-1
Client Project/Site: Don Copp Site/00504-162-00

For:
GeoEngineers Inc
523 East Second Ave
Spokane, Washington 99202

Attn: Scott Lathen

Authorized for release by:
5/20/2019 4:42:37 PM

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Table of Contents

Case Narrative

Client: GeoEngineers Inc
Job ID: 590-10919-1
Project/Site: Don Copp Site/00504-162-00

Job ID: 590-10919-1

Laboratory: Eurofins TestAmerica, Spokane

Narrative

Receipt
The samples were received on 5/3/2019 11:55 AM; the samples arrived in good condition. The temperature of the cooler at receipt was 7.8º C.

Receipt Exceptions
The following samples were received at the laboratory outside the required temperature criteria: GEI 012-DP1(5.5-6) (590-10919-1), GEI 012-DP1(9.95) (590-10919-2), GEI 012-DP2(2-2.5) (590-10919-3), GEI 012-DP2(5-5.5) (590-10919-4), GEI 012-DP3(4.5-5) (590-10919-5), GEI 012-DP3(6.5-7) (590-10919-6), GEI 012-DP4(0.5-1) (590-10919-7), GEI 012-DP4(9-9.5) (590-10919-8), GEI 012-DP5(1-1.5) (590-10919-9), GEI 012-DP5(8-8.5) (590-10919-10), GEI 012-DP1:050219 (590-10919-11) and GEI 012-DP2:050219 (590-10919-12).

GC/MS Semi VOA
Method 8270D SIM: The native sample, matrix spike, and matrix spike duplicate (MS/MSD) associated with preparation batch 590-22149 and analytical batch 590-22150 were performed at the same dilution. Due to the additional level of analyte present in the spiked samples, the concentration of 2-Methylnaphthalene, 1-Methylnaphthalene and Phenanthrene in the MS/MSD was above the instrument calibration range. The data have been reported and qualified.

Method 8270D SIM: Surrogate recovery for the following samples were outside control limits: GEI 012-DP1(5.5-6) (590-10919-1) and (590-10919-A-1-A MS). Evidence of matrix interference due to non-target analytes is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8270D SIM: The following samples required a dilution due to the nature of the sample matrix: GEI 012-DP1(5.5-6) (590-10919-1), GEI 012-DP2(5-5.5) (590-10919-4) and GEI 012-DP3(4.5-5) (590-10919-5). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method NWTPH-Dx: Detected hydrocarbons in the diesel range appear to be due to heavily weathered gasoline as well as possible weathered diesel in the following sample: GEI 012-DP1:050219 (590-10919-11).

Method NWTPH-Dx: Detected hydrocarbons in the diesel range appear to be due to weathered diesel in the following sample: GEI 012-DP2:050219 (590-10919-12).

Method NWTPH-Dx: Surrogate recovery for the following sample was outside control limits: GEI 012-DP2:050219 (590-10919-12). Evidence of matrix interference due to high target analytes is present; therefore, re-extraction and/or re-analysis was not performed.

Method NWTPH-Dx: Surrogate recovery for the following samples were outside control limits: GEI 012-DP1(5.5-6) (590-10919-1), GEI 012-DP2(5-5.5) (590-10919-4) and GEI 012-DP3(4.5-5) (590-10919-5). Evidence of matrix interference due to high target analytes is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: GeoEngineers Inc
Project/Site: Don Copp Site/00504-162-00

Job ID: 590-10919-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-10919-1	GEI 012-DP1(5.5-6)	Solid	05/02/19 09:50	05/03/19 11:55
590-10919-4	GEI 012-DP2(5-5.5)	Solid	05/02/19 11:20	05/03/19 11:55
590-10919-5	GEI 012-DP3(4.5-5)	Solid	05/02/19 12:20	05/03/19 11:55
590-10919-8	GEI 012-DP4(9-9.5)	Solid	05/02/19 13:00	05/03/19 11:55
590-10919-10	GEI 012-DP5(8-8.5)	Solid	05/02/19 13:30	05/03/19 11:55
590-10919-11	GEI 012-DP1:050219	Water	05/02/19 11:00	05/03/19 11:55
590-10919-12	GEI 012-DP2:050219	Water	05/02/19 11:30	05/03/19 11:55

Definitions/Glossary

Client: GeoEngineers Inc
Job ID: 590-10919-1
Project/Site: Don Copp Site/00504-162-00

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
X	Surrogate is outside control limits

GC Semi VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample ID: GEI 012-DP1(5.5-6)

Lab Sample ID: 590-10919-1
Date Collected: 05/02/19 09:50
Matrix: Solid
Date Received: 05/03/19 11:55
Percent Solids: 83.0

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	99000		1200		ug/Kg	☼	05/12/19 13:24	05/20/19 13:15	100
2-Methylnaphthalene	160000		1200		ug/Kg	☼	05/12/19 13:24	05/20/19 13:15	100
Acenaphthene	14000	F2	120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Acenaphthylene	1700	F2	120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Anthracene	7300	F2	120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Benzo[a]anthracene	3900	F2	120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Benzo[a]pyrene	2700	F2	120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Benzo[b]fluoranthene	990	F1 F2	120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Benzo[g,h,i]perylene	620	F1 F2	120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Benzo[k]fluoranthene	140		120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Chrysene	5800	F2	120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Dibenz(a,h)anthracene	170		120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Fluoranthene	1500	F2	120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Fluorene	9100	F2	120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Indeno[1,2,3-cd]pyrene	170		120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Naphthalene	20000		120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10
Phenanthrene	33000		1200		ug/Kg	☼	05/12/19 13:24	05/20/19 13:15	100
Pyrene	13000	F2	120		ug/Kg	☼	05/12/19 13:24	05/13/19 00:29	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*127*	*X*	*46 - 120*	*05/12/19 13:24*	*05/13/19 00:29*	*10*
2-Fluorobiphenyl (Surr)	*143*	*X*	*46 - 120*	*05/12/19 13:24*	*05/20/19 13:15*	*100*
Nitrobenzene-d5	*119*		*31 - 120*	*05/12/19 13:24*	*05/13/19 00:29*	*10*
Nitrobenzene-d5	*133*	*X*	*31 - 120*	*05/12/19 13:24*	*05/20/19 13:15*	*100*
p-Terphenyl-d14	*128*		*61 - 136*	*05/12/19 13:24*	*05/13/19 00:29*	*10*
p-Terphenyl-d14	*111*		*61 - 136*	*05/12/19 13:24*	*05/20/19 13:15*	*100*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	6500		480		mg/Kg	☼	05/15/19 08:49	05/15/19 23:59	10
Residual Range Organics (RRO) (C25-C36)	4800		1200		mg/Kg	☼	05/15/19 08:49	05/15/19 23:59	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*191*	*X*	*50 - 150*	*05/15/19 08:49*	*05/15/19 23:59*	*10*
n-Triacontane-d62	*128*		*50 - 150*	*05/15/19 08:49*	*05/15/19 23:59*	*10*

Client Sample ID: GEI 012-DP2(5-5.5)

Lab Sample ID: 590-10919-4
Date Collected: 05/02/19 11:20
Matrix: Solid
Date Received: 05/03/19 11:55
Percent Solids: 84.2

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	460000		4500		ug/Kg	☼	05/12/19 13:24	05/20/19 13:41	400
2-Methylnaphthalene	880000		4500		ug/Kg	☼	05/12/19 13:24	05/20/19 13:41	400
Acenaphthene	140000		4500		ug/Kg	☼	05/12/19 13:24	05/20/19 13:41	400
Acenaphthylene	10000		220		ug/Kg	☼	05/12/19 13:24	05/13/19 00:55	20
Anthracene	27000		220		ug/Kg	☼	05/12/19 13:24	05/13/19 00:55	20
Benzo[a]anthracene	15000		220		ug/Kg	☼	05/12/19 13:24	05/13/19 00:55	20
Benzo[a]pyrene	8000		4500		ug/Kg	☼	05/12/19 13:24	05/20/19 13:41	400

Client Sample ID: GEI 012-DP2(5-5.5)
Lab Sample ID: 590-10919-4
Date Collected: 05/02/19 11:20
Matrix: Solid
Date Received: 05/03/19 11:55
Percent Solids: 84.2

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[b]fluoranthene	ND		4500		ug/Kg	☼	05/12/19 13:24	05/20/19 13:41	400
Benzo[g,h,i]perylene	ND		4500		ug/Kg	☼	05/12/19 13:24	05/20/19 13:41	400
Benzo[k]fluoranthene	ND		4500		ug/Kg	☼	05/12/19 13:24	05/20/19 13:41	400
Chrysene	**21000**		220		ug/Kg	☼	05/12/19 13:24	05/13/19 00:55	20
Dibenz(a,h)anthracene	ND		4500		ug/Kg	☼	05/12/19 13:24	05/20/19 13:41	400
Fluoranthene	**5400**		220		ug/Kg	☼	05/12/19 13:24	05/13/19 00:55	20
Fluorene	**33000**		220		ug/Kg	☼	05/12/19 13:24	05/13/19 00:55	20
Indeno[1,2,3-cd]pyrene	ND		4500		ug/Kg	☼	05/12/19 13:24	05/20/19 13:41	400
Naphthalene	**170000**		4500		ug/Kg	☼	05/12/19 13:24	05/20/19 13:41	400
Phenanthrene	**130000**		4500		ug/Kg	☼	05/12/19 13:24	05/20/19 13:41	400
Pyrene	**52000**		220		ug/Kg	☼	05/12/19 13:24	05/13/19 00:55	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*309*	*X*	*46 - 120*	*05/12/19 13:24*	*05/20/19 13:41*	*400*
Nitrobenzene-d5	*0*	*X*	*31 - 120*	*05/12/19 13:24*	*05/20/19 13:41*	*400*
p-Terphenyl-d14	*128*		*61 - 136*	*05/12/19 13:24*	*05/20/19 13:41*	*400*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**41000**		1600		mg/Kg	☼	05/15/19 08:49	05/16/19 00:19	20
Residual Range Organics (RRO) (C25-C36)	**28000**		3900		mg/Kg	☼	05/15/19 08:49	05/16/19 00:19	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*473*	*X*	*50 - 150*	*05/15/19 08:49*	*05/16/19 00:19*	*20*
n-Triacontane-d62	*143*		*50 - 150*	*05/15/19 08:49*	*05/16/19 00:19*	*20*

Client Sample ID: GEI 012-DP3(4.5-5)
Lab Sample ID: 590-10919-5
Date Collected: 05/02/19 12:20
Matrix: Solid
Date Received: 05/03/19 11:55
Percent Solids: 66.0

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	**11000**		750		ug/Kg	☼	05/12/19 13:24	05/13/19 01:22	20
2-Methylnaphthalene	**2600**		750		ug/Kg	☼	05/12/19 13:24	05/13/19 01:22	20
Acenaphthene	**20000**		750		ug/Kg	☼	05/12/19 13:24	05/13/19 01:22	20
Acenaphthylene	**2100**		750		ug/Kg	☼	05/12/19 13:24	05/13/19 01:22	20
Anthracene	**14000**		750		ug/Kg	☼	05/12/19 13:24	05/13/19 01:22	20
Benzo[a]anthracene	**20000**		750		ug/Kg	☼	05/12/19 13:24	05/13/19 01:22	20
Benzo[a]pyrene	**18000**		1500		ug/Kg	☼	05/12/19 13:24	05/20/19 14:07	40
Benzo[b]fluoranthene	**7100**		1500		ug/Kg	☼	05/12/19 13:24	05/20/19 14:07	40
Benzo[g,h,i]perylene	**6700**		1500		ug/Kg	☼	05/12/19 13:24	05/20/19 14:07	40
Benzo[k]fluoranthene	ND		1500		ug/Kg	☼	05/12/19 13:24	05/20/19 14:07	40
Chrysene	**24000**		750		ug/Kg	☼	05/12/19 13:24	05/13/19 01:22	20
Dibenz(a,h)anthracene	**1800**		1500		ug/Kg	☼	05/12/19 13:24	05/20/19 14:07	40
Fluoranthene	**7600**		750		ug/Kg	☼	05/12/19 13:24	05/13/19 01:22	20
Fluorene	**7500**		750		ug/Kg	☼	05/12/19 13:24	05/13/19 01:22	20
Indeno[1,2,3-cd]pyrene	**2000**		1500		ug/Kg	☼	05/12/19 13:24	05/20/19 14:07	40
Naphthalene	**2200**		750		ug/Kg	☼	05/12/19 13:24	05/13/19 01:22	20
Phenanthrene	**28000**		750		ug/Kg	☼	05/12/19 13:24	05/13/19 01:22	20

Client Sample ID: GEI 012-DP3(4.5-5)

Lab Sample ID: 590-10919-5
Date Collected: 05/02/19 12:20
Matrix: Solid
Date Received: 05/03/19 11:55
Percent Solids: 66.0

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	**97000**		750		ug/Kg	☼	05/12/19 13:24	05/13/19 01:22	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*134*	*X*	*46 - 120*	*05/12/19 13:24*	*05/20/19 14:07*	*40*
Nitrobenzene-d5	*44*		*31 - 120*	*05/12/19 13:24*	*05/13/19 01:22*	*20*
Nitrobenzene-d5	*30*	*X*	*31 - 120*	*05/12/19 13:24*	*05/20/19 14:07*	*40*
p-Terphenyl-d14	*113*		*61 - 136*	*05/12/19 13:24*	*05/13/19 01:22*	*20*
p-Terphenyl-d14	*79*		*61 - 136*	*05/12/19 13:24*	*05/20/19 14:07*	*40*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**46000**		5400		mg/Kg	☼	05/15/19 08:49	05/16/19 00:39	40
Residual Range Organics (RRO) (C25-C36)	**87000**		14000		mg/Kg	☼	05/15/19 08:49	05/16/19 00:39	40

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*175*	*X*	*50 - 150*	*05/15/19 08:49*	*05/16/19 00:39*	*40*
n-Triacontane-d62	*112*		*50 - 150*	*05/15/19 08:49*	*05/16/19 00:39*	*40*

Client Sample ID: GEI 012-DP4(9-9.5)

Lab Sample ID: 590-10919-8
Date Collected: 05/02/19 13:00
Matrix: Solid
Date Received: 05/03/19 11:55
Percent Solids: 78.4

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
2-Methylnaphthalene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Acenaphthene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Acenaphthylene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Anthracene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Benzo[b]fluoranthene	**13**		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Chrysene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Fluoranthene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Fluorene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Naphthalene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Phenanthrene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1
Pyrene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 23:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*97*		*46 - 120*	*05/12/19 13:24*	*05/12/19 23:10*	*1*
Nitrobenzene-d5	*82*		*31 - 120*	*05/12/19 13:24*	*05/12/19 23:10*	*1*
p-Terphenyl-d14	*134*		*61 - 136*	*05/12/19 13:24*	*05/12/19 23:10*	*1*

Client Sample ID: GEI 012-DP4(9-9.5)
Lab Sample ID: 590-10919-8
Date Collected: 05/02/19 13:00
Matrix: Solid
Date Received: 05/03/19 11:55
Percent Solids: 78.4

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		12		mg/Kg	☼	05/15/19 08:49	05/16/19 00:59	1
Residual Range Organics (RRO) (C25-C36)	ND		30		mg/Kg	☼	05/15/19 08:49	05/16/19 00:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*87*		*50 - 150*	*05/15/19 08:49*	*05/16/19 00:59*	*1*
n-Triacontane-d62	*86*		*50 - 150*	*05/15/19 08:49*	*05/16/19 00:59*	*1*

Client Sample ID: GEI 012-DP5(8-8.5)
Lab Sample ID: 590-10919-10
Date Collected: 05/02/19 13:30
Matrix: Solid
Date Received: 05/03/19 11:55
Percent Solids: 78.4

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
2-Methylnaphthalene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Acenaphthene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Acenaphthylene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Anthracene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Benzo[b]fluoranthene	**16**		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Chrysene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Fluoranthene	**14**		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Fluorene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Naphthalene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Phenanthrene	ND		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1
Pyrene	**14**		12		ug/Kg	☼	05/12/19 13:24	05/12/19 17:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*65*		*46 - 120*	*05/12/19 13:24*	*05/12/19 17:01*	*1*
Nitrobenzene-d5	*59*		*31 - 120*	*05/12/19 13:24*	*05/12/19 17:01*	*1*
p-Terphenyl-d14	*100*		*61 - 136*	*05/12/19 13:24*	*05/12/19 17:01*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		12		mg/Kg	☼	05/15/19 08:49	05/16/19 01:19	1
Residual Range Organics (RRO) (C25-C36)	ND		31		mg/Kg	☼	05/15/19 08:49	05/16/19 01:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*80*		*50 - 150*	*05/15/19 08:49*	*05/16/19 01:19*	*1*
n-Triacontane-d62	*84*		*50 - 150*	*05/15/19 08:49*	*05/16/19 01:19*	*1*

Client: GeoEngineers Inc
Project/Site: Don Copp Site/00504-162-00

Job ID: 590-10919-1

Client Sample ID: GEI 012-DP1:050219

Lab Sample ID: 590-10919-11

Date Collected: 05/02/19 11:00

Matrix: Water

Date Received: 05/03/19 11:55

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	**22**		0.83		ug/L		05/07/19 10:05	05/09/19 11:26	10
2-Methylnaphthalene	**30**		0.83		ug/L		05/07/19 10:05	05/09/19 11:26	10
Acenaphthene	**1.5**		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Acenaphthylene	**0.25**		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Anthracene	**0.22**		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Benzo[a]anthracene	ND		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Benzo[a]pyrene	ND		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Benzo[b]fluoranthene	ND		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Benzo[g,h,i]perylene	ND		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Benzo[k]fluoranthene	ND		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Chrysene	ND		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Dibenz(a,h)anthracene	ND		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Fluoranthene	ND		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Fluorene	**1.1**		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Indeno[1,2,3-cd]pyrene	ND		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Naphthalene	**10**		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Phenanthrene	**1.6**		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1
Pyrene	**0.12**		0.083		ug/L		05/07/19 10:05	05/07/19 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*64*		*44 - 120*	*05/07/19 10:05*	*05/07/19 14:44*	*1*
2-Fluorobiphenyl (Surr)	*71*		*44 - 120*	*05/07/19 10:05*	*05/09/19 11:26*	*10*
Nitrobenzene-d5	*65*		*36 - 126*	*05/07/19 10:05*	*05/07/19 14:44*	*1*
Nitrobenzene-d5	*74*		*36 - 126*	*05/07/19 10:05*	*05/09/19 11:26*	*10*
p-Terphenyl-d14	*78*		*51 - 121*	*05/07/19 10:05*	*05/07/19 14:44*	*1*
p-Terphenyl-d14	*81*		*51 - 121*	*05/07/19 10:05*	*05/09/19 11:26*	*10*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**0.67**		0.23		mg/L		05/10/19 13:29	05/10/19 17:46	1
Residual Range Organics (RRO) (C25-C36)	ND		0.38		mg/L		05/10/19 13:29	05/10/19 17:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*95*		*50 - 150*	*05/10/19 13:29*	*05/10/19 17:46*	*1*
n-Triacontane-d62	*86*		*50 - 150*	*05/10/19 13:29*	*05/10/19 17:46*	*1*

Client Sample ID: GEI 012-DP2:050219

Lab Sample ID: 590-10919-12

Date Collected: 05/02/19 11:30

Matrix: Water

Date Received: 05/03/19 11:55

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	**19**		0.86		ug/L		05/07/19 10:05	05/09/19 11:52	10
2-Methylnaphthalene	**24**		0.86		ug/L		05/07/19 10:05	05/09/19 11:52	10
Acenaphthene	**1.3**		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Acenaphthylene	**0.23**		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Anthracene	**0.20**		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Benzo[a]anthracene	ND		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Benzo[a]pyrene	ND		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1

Client: GeoEngineers Inc
Job ID: 590-10919-1
Project/Site: Don Copp Site/00504-162-00

Client Sample ID: GEI 012-DP2:050219
Lab Sample ID: 590-10919-12
Date Collected: 05/02/19 11:30
Matrix: Water
Date Received: 05/03/19 11:55

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[b]fluoranthene	ND		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Benzo[g,h,i]perylene	ND		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Benzo[k]fluoranthene	ND		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Chrysene	ND		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Dibenz(a,h)anthracene	ND		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Fluoranthene	ND		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Fluorene	**0.75**		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Indeno[1,2,3-cd]pyrene	ND		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Naphthalene	**20**		0.86		ug/L		05/07/19 10:05	05/09/19 11:52	10
Phenanthrene	**1.2**		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1
Pyrene	**0.10**		0.086		ug/L		05/07/19 10:05	05/09/19 12:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*65*		*44 - 120*	*05/07/19 10:05*	*05/09/19 11:52*	*10*
2-Fluorobiphenyl (Surr)	*65*		*44 - 120*	*05/07/19 10:05*	*05/09/19 12:19*	*1*
Nitrobenzene-d5	*60*		*36 - 126*	*05/07/19 10:05*	*05/09/19 11:52*	*10*
p-Terphenyl-d14	*82*		*51 - 121*	*05/07/19 10:05*	*05/09/19 11:52*	*10*
p-Terphenyl-d14	*84*		*51 - 121*	*05/07/19 10:05*	*05/09/19 12:19*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	**2.7**		0.23		mg/L		05/10/19 13:29	05/10/19 18:25	1
Residual Range Organics (RRO) (C25-C36)	ND		0.39		mg/L		05/10/19 13:29	05/10/19 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*176*	*X*	*50 - 150*	*05/10/19 13:29*	*05/10/19 18:25*	*1*
n-Triacontane-d62	*95*		*50 - 150*	*05/10/19 13:29*	*05/10/19 18:25*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 590-22064/1-A
Matrix: Water
Analysis Batch: 22060

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 22064

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
2-Methylnaphthalene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Acenaphthene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Acenaphthylene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Anthracene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Benzo[a]anthracene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Benzo[a]pyrene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Benzo[b]fluoranthene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Benzo[g,h,i]perylene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Benzo[k]fluoranthene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Chrysene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Dibenz(a,h)anthracene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Fluoranthene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Fluorene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Indeno[1,2,3-cd]pyrene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Naphthalene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Phenanthrene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1
Pyrene	ND		0.090		ug/L		05/07/19 10:05	05/07/19 11:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*88*		*44 - 120*	*05/07/19 10:05*	*05/07/19 11:12*	*1*
Nitrobenzene-d5	*94*		*36 - 126*	*05/07/19 10:05*	*05/07/19 11:12*	*1*
p-Terphenyl-d14	*116*		*51 - 121*	*05/07/19 10:05*	*05/07/19 11:12*	*1*

Lab Sample ID: LCS 590-22064/2-A
Matrix: Water
Analysis Batch: 22060

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 22064

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	1.60	1.19		ug/L		74	49 - 120
2-Methylnaphthalene	1.60	1.16		ug/L		73	44 - 120
Acenaphthene	1.60	1.28		ug/L		80	54 - 120
Acenaphthylene	1.60	1.34		ug/L		84	57 - 120
Anthracene	1.60	1.40		ug/L		87	66 - 120
Benzo[a]anthracene	1.60	1.50		ug/L		94	68 - 120
Benzo[a]pyrene	1.60	1.47		ug/L		92	70 - 120
Benzo[b]fluoranthene	1.60	1.47		ug/L		92	63 - 120
Benzo[g,h,i]perylene	1.60	1.42		ug/L		89	56 - 120
Benzo[k]fluoranthene	1.60	1.50		ug/L		94	67 - 120
Chrysene	1.60	1.51		ug/L		94	69 - 120
Dibenz(a,h)anthracene	1.60	1.34		ug/L		84	58 - 120
Fluoranthene	1.60	1.48		ug/L		92	64 - 120
Fluorene	1.60	1.37		ug/L		85	59 - 120
Indeno[1,2,3-cd]pyrene	1.60	1.39		ug/L		87	58 - 120
Naphthalene	1.60	1.18		ug/L		74	52 - 120
Phenanthrene	1.60	1.40		ug/L		88	57 - 120
Pyrene	1.60	1.51		ug/L		95	52 - 120

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 590-22064/2-A
Matrix: Water
Analysis Batch: 22060

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 22064

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*66*		*44 - 120*
Nitrobenzene-d5	*85*		*36 - 126*
p-Terphenyl-d14	*99*		*51 - 121*

Lab Sample ID: LCSD 590-22064/3-A
Matrix: Water
Analysis Batch: 22060

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 22064

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene			1.60	1.13		ug/L		71	49 - 120	5	35
2-Methylnaphthalene			1.60	1.10		ug/L		69	44 - 120	6	35
Acenaphthene			1.60	1.16		ug/L		73	54 - 120	10	30
Acenaphthylene			1.60	1.24		ug/L		77	57 - 120	8	30
Anthracene			1.60	1.33		ug/L		83	66 - 120	5	30
Benzo[a]anthracene			1.60	1.43		ug/L		89	68 - 120	5	30
Benzo[a]pyrene			1.60	1.38		ug/L		87	70 - 120	6	30
Benzo[b]fluoranthene			1.60	1.40		ug/L		87	63 - 120	5	30
Benzo[g,h,i]perylene			1.60	1.32		ug/L		82	56 - 120	7	35
Benzo[k]fluoranthene			1.60	1.38		ug/L		86	67 - 120	8	30
Chrysene			1.60	1.40		ug/L		88	69 - 120	7	24
Dibenz(a,h)anthracene			1.60	1.25		ug/L		78	58 - 120	7	30
Fluoranthene			1.60	1.37		ug/L		86	64 - 120	7	30
Fluorene			1.60	1.25		ug/L		78	59 - 120	9	30
Indeno[1,2,3-cd]pyrene			1.60	1.31		ug/L		82	58 - 120	6	30
Naphthalene			1.60	1.10		ug/L		69	52 - 120	6	30
Phenanthrene			1.60	1.35		ug/L		84	57 - 120	4	30
Pyrene			1.60	1.40		ug/L		88	52 - 120	8	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*68*		*44 - 120*
Nitrobenzene-d5	*80*		*36 - 126*
p-Terphenyl-d14	*93*		*51 - 121*

Lab Sample ID: MB 590-22149/1-A
Matrix: Solid
Analysis Batch: 22150

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 22149

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
2-Methylnaphthalene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Acenaphthene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Acenaphthylene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Anthracene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Benzo[a]anthracene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Benzo[a]pyrene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Benzo[b]fluoranthene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Benzo[g,h,i]perylene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Benzo[k]fluoranthene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: MB 590-22149/1-A
Matrix: Solid
Analysis Batch: 22150

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 22149

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chrysene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Dibenz(a,h)anthracene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Fluoranthene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Fluorene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Indeno[1,2,3-cd]pyrene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Naphthalene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Phenanthrene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1
Pyrene	ND		10		ug/Kg		05/12/19 13:24	05/12/19 15:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*97*		*46 - 120*	*05/12/19 13:24*	*05/12/19 15:35*	*1*
Nitrobenzene-d5	*90*		*31 - 120*	*05/12/19 13:24*	*05/12/19 15:35*	*1*
p-Terphenyl-d14	*119*		*61 - 136*	*05/12/19 13:24*	*05/12/19 15:35*	*1*

Lab Sample ID: LCS 590-22149/2-A
Matrix: Solid
Analysis Batch: 22150

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 22149

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	267	239		ug/Kg		90	55 - 120
2-Methylnaphthalene	267	235		ug/Kg		88	48 - 120
Acenaphthene	267	252		ug/Kg		95	53 - 120
Acenaphthylene	267	247		ug/Kg		93	47 - 120
Anthracene	267	259		ug/Kg		97	60 - 129
Benzo[a]anthracene	267	279		ug/Kg		105	61 - 125
Benzo[a]pyrene	267	258		ug/Kg		97	60 - 120
Benzo[b]fluoranthene	267	277		ug/Kg		104	59 - 127
Benzo[g,h,i]perylene	267	261		ug/Kg		98	58 - 129
Benzo[k]fluoranthene	267	273		ug/Kg		102	63 - 127
Chrysene	267	283		ug/Kg		106	57 - 127
Dibenz(a,h)anthracene	267	279		ug/Kg		105	60 - 128
Fluoranthene	267	280		ug/Kg		105	63 - 127
Fluorene	267	258		ug/Kg		97	54 - 120
Indeno[1,2,3-cd]pyrene	267	271		ug/Kg		101	55 - 128
Naphthalene	267	221		ug/Kg		83	33 - 120
Phenanthrene	267	259		ug/Kg		97	55 - 121
Pyrene	267	280		ug/Kg		105	62 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*104*		*46 - 120*
Nitrobenzene-d5	*99*		*31 - 120*
p-Terphenyl-d14	*120*		*61 - 136*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCSD 590-22149/3-A
Matrix: Solid
Analysis Batch: 22150

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 22149

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene			267	203		ug/Kg		76	55 - 120	16	24
2-Methylnaphthalene			267	199		ug/Kg		75	48 - 120	17	23
Acenaphthene			267	228		ug/Kg		85	53 - 120	10	17
Acenaphthylene			267	217		ug/Kg		82	47 - 120	13	20
Anthracene			267	226		ug/Kg		85	60 - 129	14	18
Benzo[a]anthracene			267	246		ug/Kg		92	61 - 125	13	16
Benzo[a]pyrene			267	227		ug/Kg		85	60 - 120	13	20
Benzo[b]fluoranthene			267	248		ug/Kg		93	59 - 127	11	16
Benzo[g,h,i]perylene			267	242		ug/Kg		91	58 - 129	8	17
Benzo[k]fluoranthene			267	248		ug/Kg		93	63 - 127	10	16
Chrysene			267	255		ug/Kg		96	57 - 127	10	15
Dibenz(a,h)anthracene			267	252		ug/Kg		94	60 - 128	10	18
Fluoranthene			267	246		ug/Kg		92	63 - 127	13	18
Fluorene			267	222		ug/Kg		83	54 - 120	15	21
Indeno[1,2,3-cd]pyrene			267	246		ug/Kg		92	55 - 128	9	18
Naphthalene			267	187		ug/Kg		70	33 - 120	17	35
Phenanthrene			267	222		ug/Kg		83	55 - 121	15	18
Pyrene			267	251		ug/Kg		94	62 - 125	11	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*87*		*46 - 120*
Nitrobenzene-d5	*80*		*31 - 120*
p-Terphenyl-d14	*105*		*61 - 136*

Lab Sample ID: 590-10919-1 MS
Matrix: Solid
Analysis Batch: 22150

Client Sample ID: GEI 012-DP1(5.5-6)
Prep Type: Total/NA
Prep Batch: 22149

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	90000	E F2	319	62900	E 4	ug/Kg	☼	-8594	55 - 120
2-Methylnaphthalene	140000	E F2	319	94400	E 4	ug/Kg	☼	-13446	48 - 120
Acenaphthene	14000	F2	319	28400	4	ug/Kg	☼	4515	53 - 120
Acenaphthylene	1700	F2	319	2410	4	ug/Kg	☼	211	47 - 120
Anthracene	7300	F2	319	5450	4	ug/Kg	☼	-595	60 - 129
Benzo[a]anthracene	3900	F2	319	2850	4	ug/Kg	☼	-319	61 - 125
Benzo[a]pyrene	2700	F2	319	2040	4	ug/Kg	☼	-190	60 - 120
Benzo[b]fluoranthene	990	F1 F2	319	1020	F1	ug/Kg	☼	9	59 - 127
Benzo[g,h,i]perylene	620	F1 F2	319	569	F1	ug/Kg	☼	-17	58 - 129
Benzo[k]fluoranthene	140		319	492		ug/Kg	☼	109	63 - 127
Chrysene	5800	F2	319	3990	4	ug/Kg	☼	-553	57 - 127
Dibenz(a,h)anthracene	170		319	375		ug/Kg	☼	65	60 - 128
Fluoranthene	1500	F2	319	1310	4	ug/Kg	☼	-52	63 - 127
Fluorene	9100	F2	319	6840	4	ug/Kg	☼	-718	54 - 120
Indeno[1,2,3-cd]pyrene	170		319	386		ug/Kg	☼	67	55 - 128
Naphthalene	20000		319	16200	4	ug/Kg	☼	-1323	33 - 120
Phenanthrene	34000	E F2	319	23800	4	ug/Kg	☼	-3359	55 - 121
Pyrene	13000	F2	319	8600	4	ug/Kg	☼	-1399	62 - 125

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 590-10919-1 MS
Matrix: Solid
Analysis Batch: 22150

Client Sample ID: GEI 012-DP1(5.5-6)
Prep Type: Total/NA
Prep Batch: 22149

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl (Surr)	129	X	46 - 120
Nitrobenzene-d5	107		31 - 120
p-Terphenyl-d14	135		61 - 136

Lab Sample ID: 590-10919-1 MSD
Matrix: Solid
Analysis Batch: 22150

Client Sample ID: GEI 012-DP1(5.5-6)
Prep Type: Total/NA
Prep Batch: 22149

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	90000	E F2	312	88400	E 4 F2	ug/Kg	☼	-592	55 - 120	34	24
2-Methylnaphthalene	140000	E F2	312	133000	E 4 F2	ug/Kg	☼	-1490	48 - 120	34	23
Acenaphthene	14000	F2	312	13100	4 F2	ug/Kg	☼	-297	53 - 120	74	17
Acenaphthylene	1700	F2	312	1920	4 F2	ug/Kg	☼	59	47 - 120	23	20
Anthracene	7300	F2	312	7330	4 F2	ug/Kg	☼	-5	60 - 129	29	18
Benzo[a]anthracene	3900	F2	312	4070	4 F2	ug/Kg	☼	64	61 - 125	35	16
Benzo[a]pyrene	2700	F2	312	2850	4 F2	ug/Kg	☼	65	60 - 120	33	20
Benzo[b]fluoranthene	990	F1 F2	312	1340	F2	ug/Kg	☼	111	59 - 127	27	16
Benzo[g,h,i]perylene	620	F1 F2	312	763	F1 F2	ug/Kg	☼	45	58 - 129	29	17
Benzo[k]fluoranthene	140		312	540		ug/Kg	☼	127	63 - 127	9	16
Chrysene	5800	F2	312	5700	4 F2	ug/Kg	☼	-17	57 - 127	35	15
Dibenz(a,h)anthracene	170		312	372		ug/Kg	☼	65	60 - 128	1	18
Fluoranthene	1500	F2	312	1720	4 F2	ug/Kg	☼	80	63 - 127	27	18
Fluorene	9100	F2	312	11500	4 F2	ug/Kg	☼	773	54 - 120	51	21
Indeno[1,2,3-cd]pyrene	170		312	381		ug/Kg	☼	67	55 - 128	1	18
Naphthalene	20000		312	20600	4	ug/Kg	☼	52	33 - 120	24	35
Phenanthrene	34000	E F2	312	33700	E 4 F2	ug/Kg	☼	-263	55 - 121	35	18
Pyrene	13000	F2	312	12500	4 F2	ug/Kg	☼	-184	62 - 125	37	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorobiphenyl (Surr)	119		46 - 120
Nitrobenzene-d5	113		31 - 120
p-Terphenyl-d14	112		61 - 136

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 590-22138/1-A
Matrix: Water
Analysis Batch: 22139

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 22138

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.24		mg/L		05/10/19 13:29	05/10/19 14:45	1
Residual Range Organics (RRO) (C25-C36)	ND		0.40		mg/L		05/10/19 13:29	05/10/19 14:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	86		50 - 150	05/10/19 13:29	05/10/19 14:45	1
n-Triacontane-d62	77		50 - 150	05/10/19 13:29	05/10/19 14:45	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCS 590-22138/2-A
Matrix: Water
Analysis Batch: 22139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 22138

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	1.60	1.26		mg/L		79	50 - 150
Residual Range Organics (RRO) (C25-C36)	1.60	1.52		mg/L		95	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*93*		*50 - 150*
n-Triacontane-d62	*93*		*50 - 150*

Lab Sample ID: LCSD 590-22138/3-A
Matrix: Water
Analysis Batch: 22139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 22138

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics (DRO) (C10-C25)	1.60	1.36		mg/L		85	50 - 150	8	25
Residual Range Organics (RRO) (C25-C36)	1.60	1.75		mg/L		109	50 - 150	14	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*103*		*50 - 150*
n-Triacontane-d62	*103*		*50 - 150*

Lab Sample ID: MB 590-22186/1-A
Matrix: Solid
Analysis Batch: 22184

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 22186

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		10		mg/Kg		05/15/19 07:15	05/15/19 08:27	1
Residual Range Organics (RRO) (C25-C36)	ND		25		mg/Kg		05/15/19 07:15	05/15/19 08:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*83*		*50 - 150*	*05/15/19 07:15*	*05/15/19 08:27*	*1*
n-Triacontane-d62	*66*		*50 - 150*	*05/15/19 07:15*	*05/15/19 08:27*	*1*

Lab Sample ID: LCS 590-22186/2-A
Matrix: Solid
Analysis Batch: 22184

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 22186

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	66.7	58.2		mg/Kg		87	50 - 150
Residual Range Organics (RRO) (C25-C36)	66.7	57.9		mg/Kg		87	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*92*		*50 - 150*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCS 590-22186/2-A
Matrix: Solid
Analysis Batch: 22184

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 22186

Surrogate	LCS %Recovery	LCS Qualifier	Limits
n-Triacontane-d62	80		50 - 150

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Don Copp Site/00504-162-00

Job ID: 590-10919-1

Client Sample ID: GEI 012-DP1(5.5-6)
Date Collected: 05/02/19 09:50
Date Received: 05/03/19 11:55

Lab Sample ID: 590-10919-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			22097	05/08/19 14:49	SJK	TAL SPK

Client Sample ID: GEI 012-DP1(5.5-6)
Date Collected: 05/02/19 09:50
Date Received: 05/03/19 11:55

Lab Sample ID: 590-10919-1
Matrix: Solid
Percent Solids: 83.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550C			15.43 g	2 mL	22149	05/12/19 13:24	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		10			22150	05/13/19 00:29	NMI	TAL SPK
Total/NA	Prep	3550C			15.43 g	2 mL	22149	05/12/19 13:24	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		100			22213	05/20/19 13:15	NMI	TAL SPK
Total/NA	Prep	3550C			3.80 g	5 mL	22186	05/15/19 08:49	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		10			22193	05/15/19 23:59	CBW	TAL SPK

Client Sample ID: GEI 012-DP2(5-5.5)
Date Collected: 05/02/19 11:20
Date Received: 05/03/19 11:55

Lab Sample ID: 590-10919-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			22116	05/09/19 14:46	SJK	TAL SPK

Client Sample ID: GEI 012-DP2(5-5.5)
Date Collected: 05/02/19 11:20
Date Received: 05/03/19 11:55

Lab Sample ID: 590-10919-4
Matrix: Solid
Percent Solids: 84.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550C			15.91 g	2 mL	22149	05/12/19 13:24	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		20			22150	05/13/19 00:55	NMI	TAL SPK
Total/NA	Prep	3550C			15.91 g	2 mL	22149	05/12/19 13:24	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		400			22213	05/20/19 13:41	NMI	TAL SPK
Total/NA	Prep	3550C			2.29 g	5 mL	22186	05/15/19 08:49	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		20			22193	05/16/19 00:19	CBW	TAL SPK

Client Sample ID: GEI 012-DP3(4.5-5)
Date Collected: 05/02/19 12:20
Date Received: 05/03/19 11:55

Lab Sample ID: 590-10919-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			22097	05/08/19 14:49	SJK	TAL SPK

Lab Chronicle

Client: GeoEngineers Inc
Job ID: 590-10919-1
Project/Site: Don Copp Site/00504-162-00

Client Sample ID: GEI 012-DP3(4.5-5)
Lab Sample ID: 590-10919-5
Date Collected: 05/02/19 12:20
Matrix: Solid
Date Received: 05/03/19 11:55
Percent Solids: 66.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550C			15.21 g	5 mL	22149	05/12/19 13:24	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		20			22150	05/13/19 01:22	NMI	TAL SPK
Total/NA	Prep	3550C			15.21 g	5 mL	22149	05/12/19 13:24	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		40			22213	05/20/19 14:07	NMI	TAL SPK
Total/NA	Prep	3550C			1.68 g	5 mL	22186	05/15/19 08:49	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		40			22193	05/16/19 00:39	CBW	TAL SPK

Client Sample ID: GEI 012-DP4(9-9.5)
Lab Sample ID: 590-10919-8
Date Collected: 05/02/19 13:00
Matrix: Solid
Date Received: 05/03/19 11:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			22097	05/08/19 14:49	SJK	TAL SPK

Client Sample ID: GEI 012-DP4(9-9.5)
Lab Sample ID: 590-10919-8
Date Collected: 05/02/19 13:00
Matrix: Solid
Date Received: 05/03/19 11:55
Percent Solids: 78.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550C			15.68 g	2 mL	22149	05/12/19 13:24	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1			22150	05/12/19 23:10	NMI	TAL SPK
Total/NA	Prep	3550C			15.78 g	5 mL	22186	05/15/19 08:49	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			22193	05/16/19 00:59	CBW	TAL SPK

Client Sample ID: GEI 012-DP5(8-8.5)
Lab Sample ID: 590-10919-10
Date Collected: 05/02/19 13:30
Matrix: Solid
Date Received: 05/03/19 11:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			22097	05/08/19 14:49	SJK	TAL SPK

Client Sample ID: GEI 012-DP5(8-8.5)
Lab Sample ID: 590-10919-10
Date Collected: 05/02/19 13:30
Matrix: Solid
Date Received: 05/03/19 11:55
Percent Solids: 78.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550C			15.53 g	2 mL	22149	05/12/19 13:24	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1			22150	05/12/19 17:01	NMI	TAL SPK
Total/NA	Prep	3550C			15.44 g	5 mL	22186	05/15/19 08:49	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			22193	05/16/19 01:19	CBW	TAL SPK

Lab Chronicle

Client: GeoEngineers Inc
Job ID: 590-10919-1
Project/Site: Don Copp Site/00504-162-00

Client Sample ID: GEI 012-DP1:050219
Lab Sample ID: 590-10919-11

Date Collected: 05/02/19 11:00
Matrix: Water
Date Received: 05/03/19 11:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			270.6 mL	2 mL	22064	05/07/19 10:05	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1			22060	05/07/19 14:44	NMI	TAL SPK
Total/NA	Prep	3510C			270.6 mL	2 mL	22064	05/07/19 10:05	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		10			22103	05/09/19 11:26	NMI	TAL SPK
Total/NA	Prep	3510C			260.4 mL	2 mL	22138	05/10/19 13:29	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			22139	05/10/19 17:46	NMI	TAL SPK

Client Sample ID: GEI 012-DP2:050219
Lab Sample ID: 590-10919-12

Date Collected: 05/02/19 11:30
Matrix: Water
Date Received: 05/03/19 11:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			262.3 mL	2 mL	22064	05/07/19 10:05	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		10			22103	05/09/19 11:52	NMI	TAL SPK
Total/NA	Prep	3510C			262.3 mL	2 mL	22064	05/07/19 10:05	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1			22103	05/09/19 12:19	NMI	TAL SPK
Total/NA	Prep	3510C			258.2 mL	2 mL	22138	05/10/19 13:29	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			22139	05/10/19 18:25	NMI	TAL SPK

Laboratory References:

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

Accreditation/Certification Summary

Client: GeoEngineers Inc
Job ID: 590-10919-1
Project/Site: Don Copp Site/00504-162-00

Laboratory: Eurofins TestAmerica, Spokane

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-025	12-07-19
Oregon	NELAP	10	4137	12-07-19
Washington	State Program	10	C569	01-06-20

Method Summary

Client: GeoEngineers Inc
Project/Site: Don Copp Site/00504-162-00

Job ID: 590-10919-1

Method	Method Description	Protocol	Laboratory
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SPK
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	TAL SPK
Moisture	Percent Moisture	EPA	TAL SPK
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL SPK
3550C	Ultrasonic Extraction	SW846	TAL SPK

Protocol References:

EPA = US Environmental Protection Agency

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

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

Eurofins TestAmerica, Spokane
11922 East 1st Ave
Spokane, WA 99206
Phone (509) 924-9200 Fax (509) 924-9290

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: JML	Lab PM:	Carrier Tracking No(s):	COC No: 590-4564-1472.1
Client Contact: Scott Lathen	Phone: 406-239-7810	E-Mail:		Page: Page 1 of #2
Company: GeoEngineers Inc				Job #:
Address: 523 East Second Ave	Due Date Requested:			
City: Spokane	TAT Requested (days):			
State, Zip: WA, 99202				
Phone:	PO #:			
Email: slathen@geoengineers.com	WO #:			
Project Name: Don Copp	Project #: 0504-162-00			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	NWTPH-Dx	PAHs - 8270D SIM	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
GEI012-DP1(5.5-6)	5/2/2019	0950	G	S			X	X	2	
GEI012-DP1(9-9.5)		0955							2	
GEI012-DP2(2-2.5)		1130							2	
GEI012-DP2(5-5.5)		1120					X	X	2	
GEI012-DP3(4.5-5)		1220					X	X	2	
GEI012-DP3(6.5-7)		1230								
GEI012-DP4(0.5-1)		1250								
GEI012-DP4(9-9.5)		1300					X	X	2	
GEI012-DP5(1-1.5)		1315								
GEI012-DP5(8-8.5)		1330					X	X	2	

590-10919 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Josh Lee	5/3/19 1030	GEI	Matt Peterson	5/3/19 1030	GEI
Matt Peterson	5/3/19 1155	GEI	Marvin Moore	5/3/19 11:55	TASPC

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 5.8

Ver: 01/16/2019

5/20/2019

Eurofins TestAmerica, Spokane
11922 East 1st Ave
Spokane, WA 99206
Phone (509) 924-9200 Fax (509) 924-9290

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: JML	Lab PM:	Carrier Tracking No(s):	COC No: 590-4564-1472.1
Client Contact: Scott Lathen	Phone: 406-239-7910	E-Mail:		Page: Page 1 of 1
Company: GeoEngineers Inc		Analysis Requested		Job #: 2 2
Address: 523 East Second Ave	Due Date Requested:			Preservation Codes:
City: Spokane	TAT Requested (days):			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
State, Zip: WA, 99202				
Phone:	PO #:			Other:
Email: slathen@geoengineers.com	WO #:			
Project Name: Don Capp	Project #: 0504-162-06			
Site:	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	NWTPH-Dx	PAHs 8270D SIM	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
GEI Ø12-DP1:050219	5/2/19	1100	G	W			X	X	2	
GEI Ø12-DP2:050219	5/2/19	1130	G	W			X	X	2	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Josh Lu	5/3/19 1030	GEI	Matt Peterson	5/3/19 1030	GEI
2	Matt Peterson	5/3/19 1155	GEI	MAVIA 01006	5/3/19 1155	MSM
3						

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 4.0

Ver: 01/16/2019

5/20/2019

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-10919-1

Login Number: 10919
List Number: 1
Creator: O'Toole, Maria C

List Source: Eurofins TestAmerica, Spokane

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

APPENDIX C
Report Limitations and Guidelines for Use

APPENDIX C
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.

Environmental Services Are Performed for Specific Purposes, Persons and Projects

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

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

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

This report has been prepared for the former Don Copp site located at 400 South 6th Street, in Sunnyside, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

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

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

Reliance Conditions for Third Parties

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

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

Environmental Regulations are Always Evolving

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

Uncertainty May Remain Even After This Phase II ESA is Completed

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

Subsurface Conditions Can Change

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

Most Environmental Findings are Professional Opinions

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

Do Not Redraw the Exploration Logs

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

Read These Provisions Closely

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

Geotechnical, Geologic and Geoenvironmental Reports Should Not be Interchanged

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

Biological Pollutants

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

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

GeoEngineers