

Soil and Groundwater Assessment

Dawson Trucking
Valley, Washington

for
Washington State Department of Ecology

0504-130-00



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May 8, 2017



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File No. 0504-130-00

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Table of Contents

1.0 INTRODUCTION	1
2.0 SITE DESCRIPTION AND BACKGROUND	1
3.0 SCOPE AND SERVICES	1
Task 1. Prepared Work Plan.....	2
Task 2. Site Assessment and Laboratory Analyses	2
Task 3. Reporting.....	3
4.0 FIELD ACTIVITIES	3
4.1. Subsurface Explorations.....	3
4.2. Subsurface Conditions	4
4.3. Field Screening and Sampling	4
4.4. Grab Groundwater Sampling.....	5
4.5. Monitoring Well Installation.....	6
4.6. Well Surveying.....	6
4.7. Groundwater Sampling.....	6
4.8. Data Quality Exceptions.....	7
5.0 CHEMICAL ANALYTICAL RESULTS.....	8
5.1. Soil Chemical Analytical Results	8
5.2. Groundwater Chemical Analytical Results.....	9
6.0 SUMMARY	11
7.0 CONCLUSIONS AND RECOMMENDATIONS	11
8.0 LIMITATIONS	11
9.0 REFERENCES	12

LIST OF FIGURES

Figure 1. Vicinity Map

Figure 2. Site Plan

APPENDICES

Appendix A. Field Procedures and Boring Logs

Figure A-1 – Key to Exploration Logs

Figures A-2 through A-10 – Logs of Borings and Logs of Monitoring Wells

Appendix B. Chemical Analytical Laboratory Reports

Appendix C. Report Limitations and Guidelines for Use

1.0 INTRODUCTION

This report describes soil and groundwater assessment activities conducted in February 2017 at the Dawson Trucking site located at 3366 Waitts Lake Road near Valley Washington (referred to as the “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); GeoEngineers’ services for Ecology at the site were conducted under Contract No. C1100145 and Work Assignment C11145E1. This report describes field activities, observations and chemical analytical results associated with soil and groundwater samples collected at the site. The purpose of the described assessment activities was to identify remnant soil and groundwater contamination associated with former underground storage tank (UST) operations.

2.0 SITE DESCRIPTION AND BACKGROUND

The site is located about 120 feet north of Waitts Lake in Stevens County, Washington. An aluminum-sided, shop building is located near the center of the site. The building is surrounded by gravel driveways and light vegetation. A trailer is parked in the northeast corner of the property. According to Ecology documentation, a drain field is located south of the trailer and a large drain field is located south of the shop. Overhead powerlines and underground utility lines are located along the south property line. The site elevation is about 15 to 20 feet higher than the nearby lake elevation. The site is bounded by Waitts Lake Road to the south, residential property to the west and east and undeveloped land to the north. The site is currently owned by Doug Dawson. Site features are depicted in Site Plan, Figure 2.

Based on information provided by Ecology, Dawson Trucking, Inc. (Dawson) removed two underground storage tanks (USTs) and the associated piping and dispensers in 1995. The USTs had capacities of 8,000 and 6,000 gallons (identified as Tank 1 and Tank 2, respectively) and formerly contained No. 2 diesel fuel. During the UST removal, water was encountered in the tank excavation and a hole was observed in the bottom of Tank 2. Diesel was observed on the groundwater surface in the tank excavation. About 100 gallons of diesel were removed from the excavation using pumps and absorbent pads. Diesel also was observed in a test pit excavated about 20 feet south of the UST excavation. Evidence of petroleum contamination was not observed in two other test pits excavated southeast and southwest of the UST excavation. The contractor recommended sampling from two additional test pits and installing three monitoring wells to define the extent of soil and groundwater contamination, but documentation describing these actions was not available.

3.0 SCOPE AND SERVICES

Assessment services included advancing soil borings, collecting soil and grab groundwater samples, installing monitoring wells and collecting quarterly groundwater samples. The scope of services included the following:

Task 1. Prepared Work Plan

1. Prepared a Work Plan for Soil and Groundwater Assessment (GeoEngineers 2017) (Work Plan) that included a Sampling and Analysis Plan (SAP), Quality Assurance Project Plan (QAPP) and Health and Safety Plan (HASP). The Work Plan was reviewed and finalized with Ecology's comments.

Task 2. Site Assessment and Laboratory Analyses

1. Coordinated underground utility locating using the one-call system and Advanced Underground Utility Locating. Per state regulations, boring locations were marked prior to initiating the locate request.
2. Coordinated subcontractors (Environmental West Explorations, TestAmerica Laboratories, Inc. [TestAmerica] and waste disposal contractors).
3. Conducted field assessment activities including:
 - a. Drilled nine soil borings (B-1 through B-9) ranging in depth from about 3½ to 31½ feet below ground surface (bgs) using hollow-stem auger drilling techniques. Soil samples were collected using a standard penetration test (SPT) sampler at 5-foot intervals.
 - b. Observed and documented subsurface soil conditions. One soil sample was retained from each sampler for field screening and potential chemical analysis. Where possible, a soil sample was collected directly above the groundwater interface. Field screening consisted of visual observation, water sheen testing and headspace vapor measurements using a photoionization detector (PID).
 - c. Submitted one soil sample for analysis from each soil boring except boring B-1. Samples were selected for analysis based on: (1) field screening indications of contamination; (2) the sample collected at the soil/groundwater interface; or (3) the deepest sample.

Soil samples were submitted to TestAmerica for:

- i. Diesel- and oil-range petroleum hydrocarbon (DRPH and ORPH) analysis using Northwest Method NWTPH-Dx;
 - ii. Benzene, toluene, ethylbenzene and total xylenes (BTEX) analysis using EPA Method 8260C.
- d. Collected one grab groundwater sample from borings B-2, B-4, B-8 and B-9 (boring locations which were not converted into monitoring wells, as described below) from temporary well points (screened polyvinyl chloride [PVC]) installed in the open borings for chemical analysis. Grab groundwater samples were analyzed for DRPH, ORPH and BTEX using the method referenced above. Grab groundwater samples were purged from each boring for 30 minutes before collecting the sample. Water quality parameters (pH, temperature, oxidation-reduction potential [ORP], turbidity, dissolved oxygen [DO] and conductivity) were measured and documented while purging the boring.
 - e. Submitted soil and groundwater samples on a standard turnaround time. A field transport (trip) blank accompanied the soil and groundwater samples to TestAmerica. These blanks were prepared by TestAmerica with carbon-free water. The trip blank sample was analyzed for volatile organic compounds (VOCs).

- f. Installed monitoring wells (MW-1 through MW-3) in borings B-3, B-5 and B-6, respectively. The monitoring well locations were approved by Ecology and were spaced to estimate groundwater gradient and flow direction. The wells were flush-mounted and screened at least 10 feet into groundwater and 5 feet above groundwater. Each monitoring well was developed by surging and pumping.
- g. Measured depth to groundwater and calculated relative groundwater elevations to estimate groundwater flow direction and gradient. Coffman Engineers, a licensed surveyor, surveyed the elevations and locations of the monitoring wells.
- h. Drummed and labeled investigation-derived waste (IDW). A qualified contractor will be retained to profile and transport the IDW for disposal at a permitted facility.
- i. Conducted a quarterly groundwater monitoring event on February 8, 2017. Groundwater samples were collected using low-flow sampling methods. Groundwater samples were analyzed for DRPH, ORPH and BTEX using the methods referenced above. Groundwater samples were purged from each well for about 30 minutes before collecting the sample. The water quality parameters listed above were measured and documented while purging the well. A duplicate groundwater sample was collected from well MW-1.

Task 3. Reporting

1. Entered analytical data into Ecology's Environmental Information Management (EIM) database.
2. Submitted this assessment report for Ecology.

4.0 FIELD ACTIVITIES

4.1. Subsurface Explorations

Field assessment activities were conducted on February 1 through 4, 2017. Site utilities, located near the boring locations, were identified and marked by Advanced Underground Utility Locating prior to drilling. Environmental West Explorations advanced nine borings (B-1 through B-9) to depths ranging from about 3½ to 31½ feet bgs using hollow-stem drilling methods. Monitoring wells (MW-1 through MW-3) were installed in borings B-3, B-5 and B-6. Boring and monitoring well locations are depicted in Figure 2. Boring locations are summarized by the following:

- Boring B-1 was advanced north of the shop to a depth of about 25 feet bgs. Because of communication difficulties, boring B-1 was not advanced at the location approved by Ecology. Field screening evidence was not observed. Soil samples were not submitted for analysis.
- Boring B-2 was advanced near the southeast corner of the property, east of the driveway, to a depth of about 26½ feet bgs.
- Boring B-3 was advanced near the southeast corner of the shop to a depth of about 26½ feet bgs. Monitoring well MW-2 was installed with a screened interval between 10 and 25 feet bgs.
- Boring B-4 was advanced near the northeast corner of the shop to a depth of about 31½ feet bgs.

- Boring B-5 was advanced north of the shop, in the approximate location of one of the former USTs, to a depth of about 31½ feet bgs. Monitoring well MW-1 was installed with a screened interval between 15 and 30 feet bgs.
- Boring B-6 was advanced on the western portion of the property, west of the driveway, to a depth of about 25 feet bgs. Monitoring well MW-3 was installed with a screened interval between 10 and 25 feet bgs.
- Boring B-7 was advanced near the southwest corner of the shop to a depth of about 3½ feet bgs. Drilling was stopped at about 3½ feet, because water mixed with an apparent petroleum product was observed.
- Boring B-8 was advanced near the northwest corner of the shop to a depth of about 21½ feet bgs.
- Boring B-9 was advanced west of the shop to a depth of about 16½ feet bgs.

Borings B-1, B-2, B-4, and B-7 through B-9 were backfilled with bentonite. Excess soil cuttings, decontamination water, and the water/product mixture removed from boring B-7 were placed in 55-gallon steel drums, labeled, and stored on the northeast and southeast side of the garage with permission from the owner.

Boring logs associated with the borings are included in Appendix A.

4.2. Subsurface Conditions

According to the 1961, Geologic Map of Washington: Washington Division of Mines and Geology, scale 1:500,000 (Hunting, M. T., et al.) and confirmed by observation, soil conditions generally consisted of a brown silty gravel from glacial drift, to depths ranging from about 9 to 23 feet bgs. Silt lenses were observed in borings B-2, B-3 (MW-2), B-4, B-5 (MW-1), B-6 (MW-3) and B-8 at about 2 and 4 feet bgs. The silty gravel unit was underlain by a brown outwash sand with varying silt content.

Groundwater was encountered during drilling operations in borings B-2 through B-9 at depths ranging from about 15 to 30 feet bgs in the outwash sand unit. Saturated soil was encountered at about 5 feet bgs in boring B-2 and at about 6 feet bgs in boring B-4. After 5 to 6 feet bgs, soil graded from wet to moist until groundwater was encountered at deeper depths. During drilling operations and the subsequent groundwater monitoring event, groundwater levels rose in borings B-2 through B-9 and in the monitoring wells.

4.3. Field Screening and Sampling

Soil samples were collected at 5-foot intervals from each boring using a SPT sampler. Samples were placed in laboratory supplied containers. Soil samples were field-screened for the potential presence of petroleum contamination by visual examination, headspace vapor monitoring with a PID, and water-sheen testing. Field screening procedures are described in Appendix A. Field screening indications of contamination are summarized below.

- In boring B-3 (MW-2), a petroleum-like odor was detected from the 5- to 6½-foot-depth interval to the 15- to 16½-foot-depth interval. Volatile organic vapors were detected at 1.1 parts per million (ppm) from the 5- to 6½-foot-depth interval to the 15- to 16½-foot-depth interval.

- In boring B-4, a petroleum-like odor was detected from the 5- to 6½-foot-depth interval to the 15- to 16½-foot-depth interval. Volatile organic vapors were detected at 14 ppm at the 10- to 11½-foot-depth interval.
- In boring B-5 (MW-1), a petroleum-like odor was detected from the 5- to 6½-foot-depth interval to the 30- to 31½-foot-depth interval. Volatile organic vapors were detected at 14.2 ppm at the 5- to 6½-foot-depth interval.
- In boring B-7, a petroleum product mixed with water was encountered around the 3 to 3½-foot-depth interval. Volatile organic vapors were detected at 70.4 ppm and a petroleum-like odor was present. A soil sample was collected from the drill cuttings.
- Field screening indications of contamination were not observed in borings B-1, B-2, B-6 (MW-3), B-8 and B-9.

Soil samples from borings B-2 through B-9 were submitted for analysis. A sample was not submitted from B-1 because field screening evidence was not observed. Chemical analytical results are discussed in “Section 5.0.”

4.4. Grab Groundwater Sampling

Depth to groundwater, relative to the top of the temporary well casing or drill casing, was measured to the nearest 0.01 foot using an electronic water level indicator. Groundwater was sampled in four borings (B-2, B-4, B-8 and B-9) by installing temporary well screens consisting of 2-inch diameter, 0.01-slot screened PVC. Groundwater samples were collected using a low-flow groundwater sampling procedure included in Appendix A. Sample activity is summarized below:

Groundwater levels recorded prior to purging activities are summarized in Table 1. While purging the four borings, groundwater levels rose about 1 foot in boring B-2, 2 feet in boring B-4, 1 foot in boring B-8 and ½ foot in boring B-9. In general, groundwater levels measured during groundwater sampling were much higher than groundwater levels encountered during drilling, indicating confined aquifer conditions.

TABLE 1. DEPTH TO GROUNDWATER IN TEMPORARY WELLS AND GROUNDWATER QUALITY PARAMETERS

Boring	Depth to Water and Field Measured Natural Attenuation Parameters						
	Depth to Water (feet bgs) ¹	pH (pH units)	Specific Conductivity (µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity ² (NTU)	Temperature (degrees C)
B-2	22.00	7.54	580	-54.7	5.04	3001.3	13.2
B-4	15.10	7.52	596	-56.9	4.40	1239.3	14.1
B-8	6.82	7.59	533	55.6	8.01	2985.2	8.4
B-9	14.11	7.80	586	90.1	8.74	2568.1	9.2

Notes:

¹Depth to water measurements were not static.

²Turbidity is not a natural attenuation parameter but was measured in the field to evaluate groundwater stabilization.

NTU = nephelometric turbidity units; mg/L = milligrams per liter; mV = millivolts; µS/cm = microSiemens per centimeter

Turbidity levels were high because of the disturbance of soil caused by drilling activities and rising groundwater. Samples were collected after 30 minutes of purging, in accordance with the work plan.

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.” Purge water generated during groundwater sampling was drummed, labeled and stored on-site for profiling and disposal.

4.5. Monitoring Well Installation

GeoEngineers installed three groundwater monitoring wells MW-1 (boring B-5), MW-2 (boring B-3) and MW-3 (boring B-6) on February 2 and 3, 2017. The monitoring well locations were selected based on field screening evidence of potential contamination. Well construction details are included in the boring logs in Appendix A. The wells were finished with a flush-mounted monument.

During monitoring well installation, water levels rose approximately 20 feet in monitoring MW-1 and 10 feet in monitoring wells MW-2 and MW-3.

Environmental West Explorations developed the wells by surging and bailing the wells using a submersible pump system. Water was bailed from the wells until water appeared free of sediment. Approximately 40 gallons of water were removed from monitoring well MW-1. Approximately 35 gallons of water were removed from monitoring well MW-2. Approximately 66 gallons of water were removed from monitoring well MW-3. Decontamination/development water were placed in 55-gallon steel drums, labeled, and stored in the designated areas.

4.6. Well Surveying

Coffman Engineering, a licensed surveyor, surveyed the horizontal locations and elevations of the monitoring wells on February 17, 2017. A survey reference mark was established on the north side of each monitoring well casing as a reference for measuring groundwater elevations.

4.7. Groundwater Sampling

Groundwater samples were collected from monitoring wells (MW-1 through MW-3) on February 8, 2017. Depth to groundwater, measured from the top of the PVC well casings, ranged from approximately 1.25 feet bgs (MW-1) to 7.17 feet bgs (MW-3) and are reported in Table 2. Groundwater elevations ranged from approximately 1,957.24 feet in monitoring well MW-2 to 1,967.98 feet in monitoring well MW-1. Based on groundwater elevations measured on February 8, 2017, groundwater flow generally was toward the south-southwest, as depicted in Figure 2. The estimated hydraulic groundwater gradient across the site was about 0.05 feet per foot (about 264 feet per mile). Groundwater elevation contours provided on Figure 2 were based on depth to water measurements, surveyed elevations of well casings, Surfer Version 1.2 modeling, and our hydrogeological interpretation.

During the sampling event, the well plug on monitoring well MW-1 was under pressure upon opening the well. The water level increased approximately 2 feet from the time of opening the well plug to the time of sampling.

TABLE 2. GROUNDWATER ELEVATIONS AND HEADSPACE PID READINGS (FEBRUARY 8, 2017)

Well Number	Top of Casing Elevation ¹ (feet)	Depth to Water ² (feet)	Groundwater Elevation ³ (feet)	PID ⁴ (ppm)
MW-1	1,969.23	1.25	1,967.98	185.7
MW-2	1,962.32	5.08	1,957.24	21.7

Well Number	Top of Casing Elevation ¹ (feet)	Depth to Water ² (feet)	Groundwater Elevation ³ (feet)	PID ⁴ (ppm)
MW-3	1,964.77	7.17	1,957.60	6.3

Notes:

¹Elevations relative to North American Vertical Datum of 1988, as surveyed by Coffman Engineers.

²Depths measured relative to the north side of the top of the PVC well casing

³Groundwater elevations calculated using the formula: Groundwater Elevation = Top of Casing Elevation - Depth to Water

⁴Headspace vapor measurements collected upon opening the well casing using a PID.

The monitoring wells MW-1 through MW-3 were purged and sampled using low-flow sampling techniques. A peristaltic pump equipped with disposable tubing was used to purge and sample each well. The tubing intake was set about halfway between the top of ground water and the bottom of the screen. The tubing intake was set at 14 feet bgs in MW-1, 9.8 feet bgs in MW-2 and 8.8 feet bgs in MW-3. Groundwater quality parameters generally were measured at 3-minute intervals during well purging. Groundwater samples were collected when each water quality parameter had stabilized with a maximum purge time of 30 minutes. Groundwater quality parameters are summarized in Table 3. Field methods are described in Appendix A. A duplicate sample was collected from monitoring well MW-1.

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.”

TABLE 3. GROUNDWATER QUALITY PARAMETERS

Monitoring Well	Field Measured Natural Attenuation Parameters					
	pH (pH units)	Specific Conductivity (μ S/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity ¹ (NTU)	Temperature (degrees C)
MW-1	7.58	597	-173.8	4.22	222.8	9.8
MW-2	7.48	596	-158.8	1.89	53.0	10.7
MW-3	8.28	585	-272.5	2.38	126.6	9.2

Notes:

¹Turbidity is not a natural attenuation parameter but was measured in the field to evaluate groundwater stabilization.

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

4.8. Data Quality Exceptions

Turbidity in monitoring wells did not reach the stabilization criteria within the 30-minute purge time as established in the work plan. The water quality meter was calibrated and the equipment was operating within normal parameters during the groundwater monitoring event. Groundwater pumping rates (about 250 milliliters per minute) were within the established range for low-flow sampling. Higher turbidity concentrations in the monitoring wells could be reflective of the silty gravel formation. Turbidity could not be reduced despite low flow purging activities.

5.0 CHEMICAL ANALYTICAL RESULTS

5.1. Soil Chemical Analytical Results

Soil samples were submitted to TestAmerica for the chemical analyses described in “Section 3.0.” TestAmerica’s laboratory reports are included in Appendix B; chemical analytical results are summarized and compared to the Washington State Model Toxics Control Act (MTCA) Method A unrestricted land use cleanup levels in Tables 4 and 5. Detected analytes are summarized below:

- Ethylbenzene was detected in the sample collected from the boring B-7 soil cuttings at a concentration less than the MTCA Method A cleanup level.
- Total xylenes were detected in the sample collected from the boring B-7 soil cuttings at a concentration greater than the MTCA Method A cleanup level.
- DRPH was detected in the samples collected from boring B-5 (MW-1) and the boring B-7 soil cuttings at concentrations greater than the MTCA Method A cleanup level.
- ORPH was detected in the sample collected from the boring B-7 soil cuttings at a concentration less than the MTCA Method A cleanup level.

TABLE 4. CHEMICAL ANALYTICAL RESULTS – SOIL (BTEX)¹

Sample Identification (depth interval)	Date Sampled	Units	Benzene ²	Toluene ²	Ethylbenzene ²	m,p-Xylene ²	o-Xylene ²	Total Xylenes ²
B-2 (25-25.25)	02/04/17	mg/kg	<0.026	<0.13	<0.13	<0.52	<0.26	<0.78
B-3/MW-1 (10.75-11)	02/04/17	mg/kg	<0.020	<0.098	<0.098	<0.39	<0.20	<0.59
B-4 (11-11.25)	02/02/17	mg/kg	<0.029	<0.15	<0.15	<0.58	<0.29	<0.87
B-5/MW-1 (5.5-5.75)	02/02/17	mg/kg	<0.55	<2.7	<2.7	<11	<5.5	<16
B-6/MW-3 (15.5-15.75)	02/03/17	mg/kg	<0.025	<0.13	<0.13	<0.51	<0.25	<0.76
B-7 Cuttings	02/03/17	mg/kg	<0.42	<2.1	3.6	17	9.9	27
B-8 (16.25-16.5)	02/03/17	mg/kg	<0.023	<0.12	<0.12	<0.47	<0.23	<0.70
B-9 (10.75-11)	02/04/17	mg/kg	<0.024	<0.12	<0.12	<0.49	<0.12	<0.73
Trip Blank	02/01/17	mg/kg	<0.20	<1.0	<1.0	<2.0	<1.0	<3.0
MTCA Method A CUL ⁴		mg/kg	0.03	7	6		9 ⁴	

Notes:

¹Chemical analyses completed by TestAmerica Laboratories, Inc. located in Spokane Valley, Washington.

²Analyzed using EPA Method 8260C.

³MTCA Method A CUL - Washington State Model Toxics Control Act Method A unrestricted land use cleanup level.

⁴Cleanup level for total xylenes (o-xylene and m,p-xylene). Concentrations were summed to determine compliance.

mg/kg = milligrams per kilogram

Bold = Analyte concentrations are greater than the laboratory method reporting limit.

Red border indicates contaminant concentration greater than the applicable MTCA Method A Cleanup Level.

TABLE 5. CHEMICAL ANALYTICAL RESULTS – SOIL (TPH)

Sample Identification (depth interval)	Date Sampled	DRPH ² (mg/kg)	ORPH ² (mg/kg)
B-2 (25-25.25)	02/04/17	<12	<29
B-3/MW-2 (10.75-11)	02/04/17	<11	<26
B-4 (11-11.25)	02/02/17	<12	<30
B-5/MW-1 (5.5-5.75)	02/02/17	3,400	66⁴
B-6/MW-3 (15.5-15.75)	02/03/17	<11	<27
B-7 Cuttings	02/03/17	14,000	<320
B-8 (16.25-16.5)	02/03/17	<11	<26
B-9 (10.75-11)	02/04/17	<11	<28
MTCA Method A CUL ³		2,000	2,000

Notes:

¹ Chemical analyses completed by TestAmerica Laboratories, Inc. located in Spokane Valley, Washington.

²DRPH and ORPH analyzed using Northwest Method NWTPH-Dx.

³MTCA Method A CUL - Washington State Model Toxics Control Act Method A unrestricted land use cleanup level.

⁴TestAmerica Laboratories, Inc. reported detected hydrocarbons in the oil range appear to be due to diesel overlap.

TPH = total petroleum hydrocarbons

Bold = Analyte concentrations are greater than the laboratory method reporting limit.

Red border indicates contaminant concentrations greater than the MTCA Method A Cleanup Level.

5.2. Groundwater Chemical Analytical Results

Four grab groundwater samples were submitted from borings B-2, B-4, B-8 and B-9 and three subsequent monitoring well groundwater samples and a duplicate sample were submitted to TestAmerica for the chemical analyses described in “Section 3.0.” The duplicate sample was collected from monitoring well MW-1. TestAmerica’s laboratory report is included in Appendix B; chemical analytical results are summarized and compared to MTCA Method A cleanup levels for unrestricted land use in Tables 6 and 7. Detected analytes are summarized below:

- Benzene was detected in the sample collected from monitoring well MW-1 at a concentration greater than the MTCA Method A cleanup level.
- Ethylbenzene, toluene and total xylenes were detected in the sample collected from monitoring well MW-1 at concentrations less than the MTCA Method A cleanup level.
- DRPH was detected in the grab groundwater sample collected from boring B-8 at a concentration less than the MTCA Method A cleanup level. DRPH was detected in the grab sample collected from boring B-4 and the sample collected from monitoring well MW-1 at concentrations greater than the MTCA Method A cleanup level.

TABLE 6. CHEMICAL ANALYTICAL RESULTS – GROUNDWATER (BTEX)¹

Sample Identification	Date Sampled	Units	Benzene ²	Toluene ²	Ethylbenzene ²	m,p-Xylene ²	o-Xylene ²	Total Xylenes ²
B-2:020417	02/04/17	µg/L	<0.40	<2.0	<2.0	<4	<2.0	<6.0
B-4:020117	02/01/17	µg/L	<0.20	<1.0	<1.0	3.7	<1.0	4.3
B-8:020317	02/03/17	µg/L	<0.40	<2.0	<2.0	<4.0	<2.0	<6.0
B-9:020417	02/04/17	µg/L	<0.20	<1.0	<1.0	<2.0	<1.0	<3.0
MW-1:020817	02/08/17	µg/L	6.3	1.4	38	30	29	59
MW-2:020817	02/08/17	µg/L	<0.20	<1.0	<1.0	<2.0	<1.0	<3.0
MW-3:020817	02/08/17	µg/L	<0.20	<1.0	<1.0	<2.0	<1.0	<3.0
Dup:020817 (MW-1)	02/08/17	µg/L	6.4	1.3	38	30	29	59
MTCA Method A CUL ³		µg/L	5	1,000	700		1,000 ⁴	

Notes:

¹Chemical analyses completed by TestAmerica Laboratories, Inc. located in Spokane Valley, Washington.

²BTEX analyzed using EPA Method 8260C.

³MTCA Method A CUL - Washington State Model Toxics Control Act Method A unrestricted land use cleanup level.

⁴Cleanup level for total xylenes (o-xylene and m,p-xylene). Concentrations were summed to determine compliance.

µg/L = micrograms per liter.

Bold = Analyte concentrations are greater than the laboratory method reporting limit.

Red border indicates contaminant concentration greater than the MTCA Method A Cleanup Level.

TABLE 7. CHEMICAL ANALYTICAL RESULTS – GROUNDWATER (TPH)¹

Sample Identification	Date Sampled	DRPH ² (µg/L)	ORPH ² (µg/L)
B-2:020417	02/04/17	<140	<230
B-4:020117	02/01/17	1,100	<220
B-8:020317	02/03/17	250	<240
B-9:020417	02/04/17	<140	<230
MW-1:020817	02/08/17	2,600	<210
MW-2:020817	02/08/17	<120	<200
MW-3:020817	02/08/17	<120	<210
Dup:020817 (MW-1)	02/08/17	2,500	<210
MTCA Method A CUL ³		500	500

Notes:

¹Chemical analyses completed by TestAmerica Laboratories, Inc. located in Spokane Valley, Washington.

²DRPH and ORPH analyzed using Northwest Method NWTPH-Dx.

³MTCA Method A CUL - Washington State Model Toxics Control Act Method A unrestricted land use cleanup level.

Bold = Analyte concentrations are greater than the laboratory method reporting limit.

Red border indicates contaminant concentration greater than the MTCA Method A Cleanup Level.

6.0 SUMMARY

Initial soil and groundwater assessment activities were conducted on February 1 through February 8, 2017 at the Dawson Trucking site located at 3366 Waitts Lake Road in Valley Washington. Nine borings (B-1 through B-9) were advanced to depths ranging between 3½ to 31½ feet bgs. Observed soil conditions generally consisted of a very dense brown silty gravel with occasional silt lenses (probable glacial till) underlain by brown outwash sand with variable silt. Groundwater was encountered between 15 and 30 feet bgs and appears to be confined. Water mixed with petroleum product was encountered in shallow soil in boring B-7, located near the southwest corner of the shop.

Soil samples were submitted for BTEX, DRPH and ORPH analysis. DRPH concentrations were greater than the MTCA Method A cleanup level in the sample from boring B-5 and the soil cuttings sample from B-7. Xylene concentrations were greater than the MTCA Method A cleanup level in the soil cuttings from B-7.

Four grab groundwater samples were collected from borings B-2, B-4, B-8 and B-9 and submitted for BTEX, DRPH and ORPH analysis. DRPH concentrations in the sample collected from boring B-4 were greater than the MTCA Method A cleanup level. Monitoring wells were installed in three of the boring locations (MW-1 through MW-3) to depths of 25 and 30 feet bgs. On February 8, 2017, GeoEngineers conducted a groundwater monitoring event and submitted three groundwater samples and duplicate sample for DRPH, ORPH and BTEX, analysis. DRPH and benzene concentrations were greater than the MTCA Method A cleanup levels in the groundwater sample from MW-1.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Groundwater contamination was detected in the groundwater samples collected near the former UST tank (monitoring well MW-1 and boring B-4). However, groundwater contamination does not seem to be widespread. Based on our limited knowledge of the site, the silty gravel (glacial till) unit might serve as a confining layer with limited gradient transport capabilities. To further define the extent of soil and groundwater contamination near monitoring well MW-1 and downgradient boring B-4, we recommend additional sampling and monitoring well installation.

The water mixed with petroleum product encountered in boring B-7 at 3½ feet bgs could originate from an unknown source not associated with the former UST. The extent of related groundwater and soil contamination is unknown. Soil and groundwater contamination might be present downgradient of boring B-7. We recommend additional sampling and installing monitoring wells to define the extent of soil and groundwater contamination near boring B-7.

A contractor will be retained to pick up, transport and dispose the IDW at an appropriate facility. The accumulated IDW amounted to 19 drums.

8.0 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.

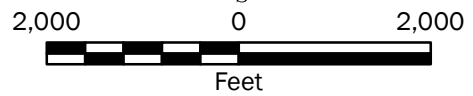
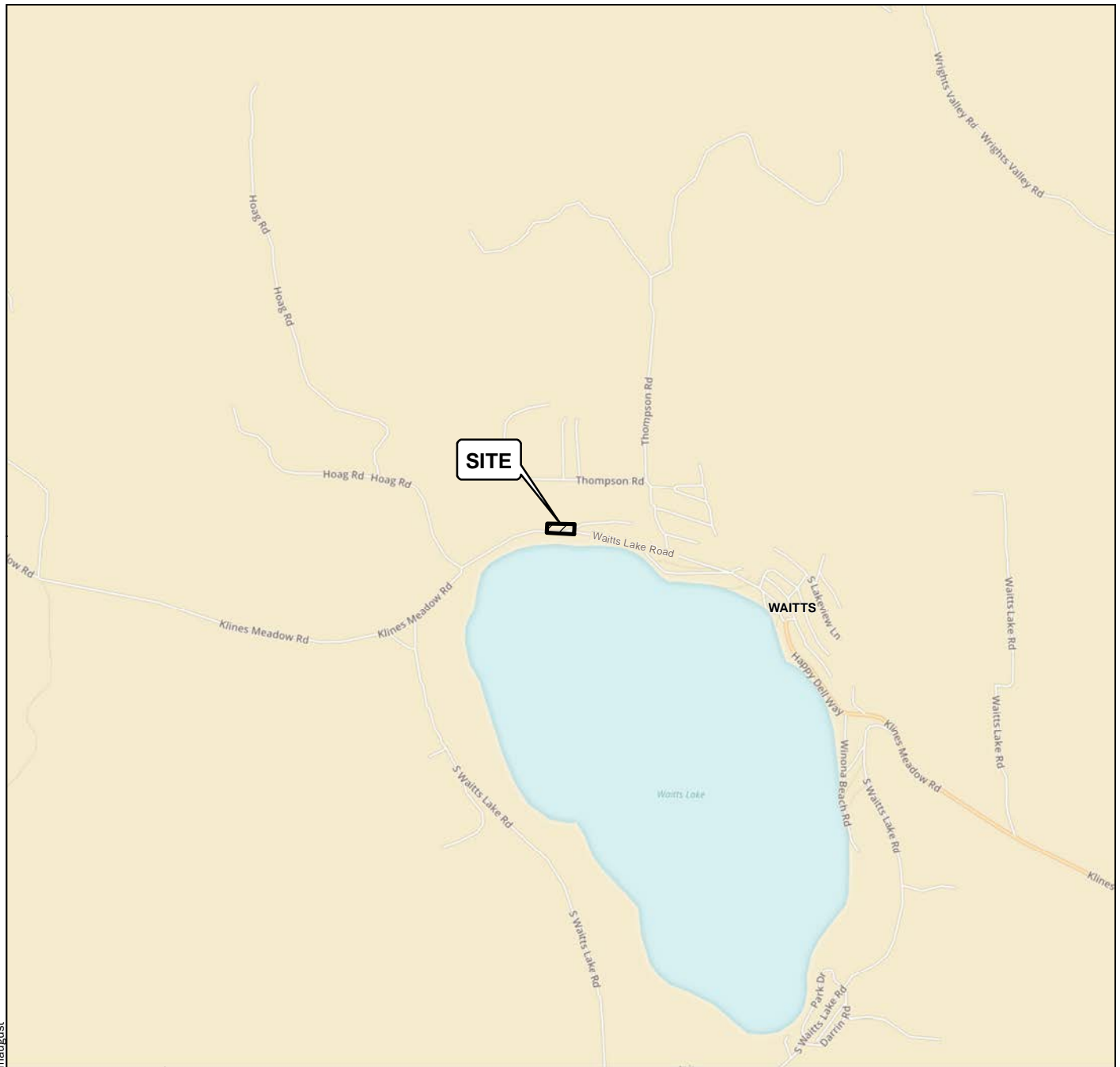
Any electronic form, facsimile or hard copy of the original document (email, text, table and/or figure), if provided, and any attachments should be considered a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

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

9.0 REFERENCES

Puls, R.W. and M.J. Barcelona. 1996. Low-flow (minimal drawdown) ground-water sampling procedures: EPA Ground Water Issue, April. p.1-9.

U.S. Environmental Protection Agency, Region 1. 1996. “Low stress (low-flow) purging and sampling procedure for the collection of ground water samples from monitoring wells.” EPA SOP No. GW 0001, Revision No. 2, July 30.



Vicinity Map

Dawson Trucking
Valley, Washington



Figure 1

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 UTM Zone 11N



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Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: ArcGIS Online.

Projection: NAD 1983 HARN StatePlane Washington North FIPS 4601 Feet

Legend

- Boring Number and Approximate Location
- Investigation Derived Waste Approximate Location
- MW-1 Groundwater Elevation (feet) and Approximate Location
- Approximate Location of Utility Lines
- Inferred Groundwater Contours

- Former UST Approximate Location
- Diesel Range Hydrocarbon (DRPH) concentration is greater than MTCA Method A Cleanup Level in Soil and/or Groundwater
- Benzene concentration is greater than MTCA Method A Cleanup Level in Groundwater
- Total Xylene concentration is greater than MTCA Method A Cleanup Level in Soil



Site Plan	
Dawson Trucking Valley, Washington	
	Figure 2

APPENDIX A
Field Procedures and Boring Logs

APPENDIX A FIELD PROCEDURES AND BORING LOGS

General

Subsurface conditions at the Dawson Trucking site were explored on February 1 through February 4, 2017, by advancing nine borings using hollow-stem auger drilling techniques. Three borings were completed as groundwater monitoring wells at the approximate locations shown on Figure 2. The borings were advanced to 15 to 30 feet bgs. Boring locations were established in the field using a site plan and measurements from onsite structures. Monitoring well locations and elevations were established by Coffman Engineers, a licensed surveyor. 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 were obtained at 5-foot intervals using a SPT sampler. Soil samples were removed from the SPT sampler 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 and monitoring well construction diagrams are presented in Figures A-2 through A-10. The logs are based on field data interpretation and indicate the approximate depth at which subsurface materials or their characteristics change, although these changes might actually be gradual.

Field Screening of Soil Samples

A GeoEngineers field representative performed field screening tests on soil samples and recorded observations on the field boring log and in the field notebook. Field screening results were used to aid in the selection of soil samples for chemical analysis. The sample from each boring showing the highest likelihood of petroleum contamination based on field screening was selected for laboratory analysis. The remaining samples were submitted to the laboratory and held pending the results of the samples submitted for analysis.

Screening methods included: (1) visual examination; (2) water sheen screening; and (3) headspace vapor screening using a PID. Visual screening consisted of inspecting the soil for discoloration indicative of the presence of petroleum-contaminated material in the sample.

Water-sheen screening involved placing soil in a pan of water and observing the water surface for signs of sheen. Sheen screening detects 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.

Water sheen testing equipment was either disposed or decontaminated before field screening each sample using a Liquinox® soap solution with a water rinse.

Headspace vapor screening involved inserting a soil sample into a sealed plastic bag and measuring the airspace VOC vapor concentrations in ppm with a PID. When a soil sample was placed in a sealed plastic bag with air space, the bag was warmed and shaken to expose the soil to the air trapped in the bag. The probe of the PID, calibrated to isobutylene following the manufacturer’s instructions, was inserted into a small opening in the bag seal and the measurement was collected. The PID typically is designed to quantify VOC vapor concentrations in the range between 0.1 ppm and 1,999 ppm with an accuracy of 10 percent of the reading and between 2,000 ppm and 10,000 ppm with an accuracy of 20 percent of the reading.

Field screening results are site-specific. The results vary with temperature, soil type, type of contaminant, and soil moisture content.

Groundwater Sampling Procedures

Grab groundwater samples were collected from borings B-2, B-4, B-8 and B-9 on February 1 through February 4, 2017. Groundwater samples from monitoring wells MW-1 through MW-3 were collected on February 8, 2017.

Groundwater Depths

Depths to groundwater were measured relative to the north side of the monitoring well casing rims or drill casing 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 Sampling

Grab groundwater samples were collected using either a bladder pump or a peristaltic pump with the tubing inserted into a temporary well casing. Each grab sample was purged about 30 minutes before sampling and the groundwater parameters listed below were measured during the purge. After 30 minutes of purging, the pump’s discharge tubing was disconnected from the flow-through cell and groundwater samples were collected for analysis. Each sample was pumped directly into sample containers supplied by the laboratory.

Low-Flow Sampling Procedures

Groundwater sampling was performed consistent with the EPA’s low-flow groundwater sampling procedure, as described by EPA (2010) and Puls and Barcelona (1996). The tubing intake was set about halfway between the depth to water and the bottom of the screen. Monitoring wells were purged using a peristaltic pump equipped with disposable tubing. During purging activities, water quality parameters, including pH,

conductivity, temperature, turbidity, ORP and DO, were measured using a YSI Pro multi-parameter meter equipped with a flow-through cell; measurements were recorded approximately every 3 minutes. The meter calibration was verified at the beginning of each work day consistent with manufacturer recommendations prior to purging and sampling activities.

Groundwater samples were collected after: (1) water quality parameters had stabilized; or (2) a maximum purge time of at least 30 minutes was achieved. During purging and sampling, the purge rate was not allowed to exceed 500 milliliters per minute. Water quality parameter stabilization criteria include the following:

- Turbidity: ± 10 percent for values greater than 5 NTU;
- DO: ± 10 percent for values greater than 0.5 milligrams per liter;
- Conductivity: ± 3 percent;
- pH: ± 0.1 unit;
- Temperature: ± 3 percent; and
- ORP: ± 10 millivolts.

After groundwater quality stabilization criteria were reached, the pump's discharge tubing was disconnected from the flow-through cell and groundwater samples were collected for analysis. Each sample was pumped directly into sample containers supplied by the laboratory. A duplicate groundwater sample was collected from well MW-1. Groundwater samples collected for chemical analysis were kept cool during on-site storage and transport to the laboratory. Chain-of-custody procedures were observed during transport and delivery of the groundwater samples.

SOIL CLASSIFICATION CHART

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

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

Sampler Symbol Descriptions

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

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.

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS		TYPICAL DESCRIPTIONS
GRAPH	LETTER	
	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

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
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

Key to Exploration Logs



Figure A-1

Drilled	Start 2/3/2017	End 2/3/2017	Total Depth (ft)	25	Logged By Checked By	CMD SHL	Driller	Environmental West Exploration, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	1977 NAVD88			Hammer Data	Cathead & Pulley System 140 (lbs) / 30 (in) Drop			Drilling Equipment	Mobile B-90	
Easting (X) Northing (Y)	2381001.49 449566.1			System Datum	WA State Plane North NAD83			Groundwater not observed at time of exploration		
Notes:										

Elevation (feet)	FIELD DATA					Group Classification	MATERIAL DESCRIPTION	Shoen	Headspace Vapor (ppm)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing					
1975	0					GM	Brown silty fine to coarse gravel with sand (very dense, moist)			
1970	5	15	65		B-1(6-6.25)			NS	<1	
1965	10	15	97			GP-GM	Brown fine to coarse gravel with silt and sand (dense, moist)			
1960	15	6	105/5"		B-1(15-15.25)		Grades to very dense			
1955	20	6	65					NS	<1	
25	25									

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

Log of Boring B-1



Project: Dawson Trucking
Project Location: Valley, Washington
Project Number: 0504-130-00

Figure A-2
Sheet 1 of 1

Spokane: Date: 2/19/17 Path: P:\0_0504130\GINT\050413000.GPJ DBTemplate:GEOENGINEERS_DF_STD_US_2017.GDT\GEB_ENVIRONMENTAL_STANDARD_NO_GW

Drilled	Start 2/4/2017	End 2/4/2017	Total Depth (ft)	26.5	Logged By Checked By	CMD SHL	Driller	Environmental West Exploration, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	1986 NAVD88			Hammer Data	Cathead & Pulley System 140 (lbs) / 30 (in) Drop			Drilling Equipment	Mobile B-90	
Easting (X) Northing (Y)	2381001.49 449506.43			System Datum	WA State Plane North NAD83			Groundwater observed at 25 feet at time of exploration		
Notes:										

Elevation (feet)	Depth (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sneen	Headspace Vapor (ppm)	REMARKS
		Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing						
1985	0					GM	Brown silty fine to coarse gravel with sand (dense, moist)				
						ML	Brown silt with sand and occasional gravel (stiff, moist)				
						GM	Brown silty fine to coarse gravel with sand (dense, moist)				
						ML	Brown silt with sand and occasional gravel (stiff, wet)				
1980	5	18	30		B-2(5-5.25)			NS	<1		
1975	10	6	52		B-2(10.25-10.5)			NS	<1		
1970	15	5	85		B-2(15-15.25)		Grades to very dense	NS	<1		
1965	20	2	56				Grades to dense				
1960	25	6	34		B-2(25-25.25) CA	SM	Brown silty fine to medium sand (medium dense, wet)	NS	<1		

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

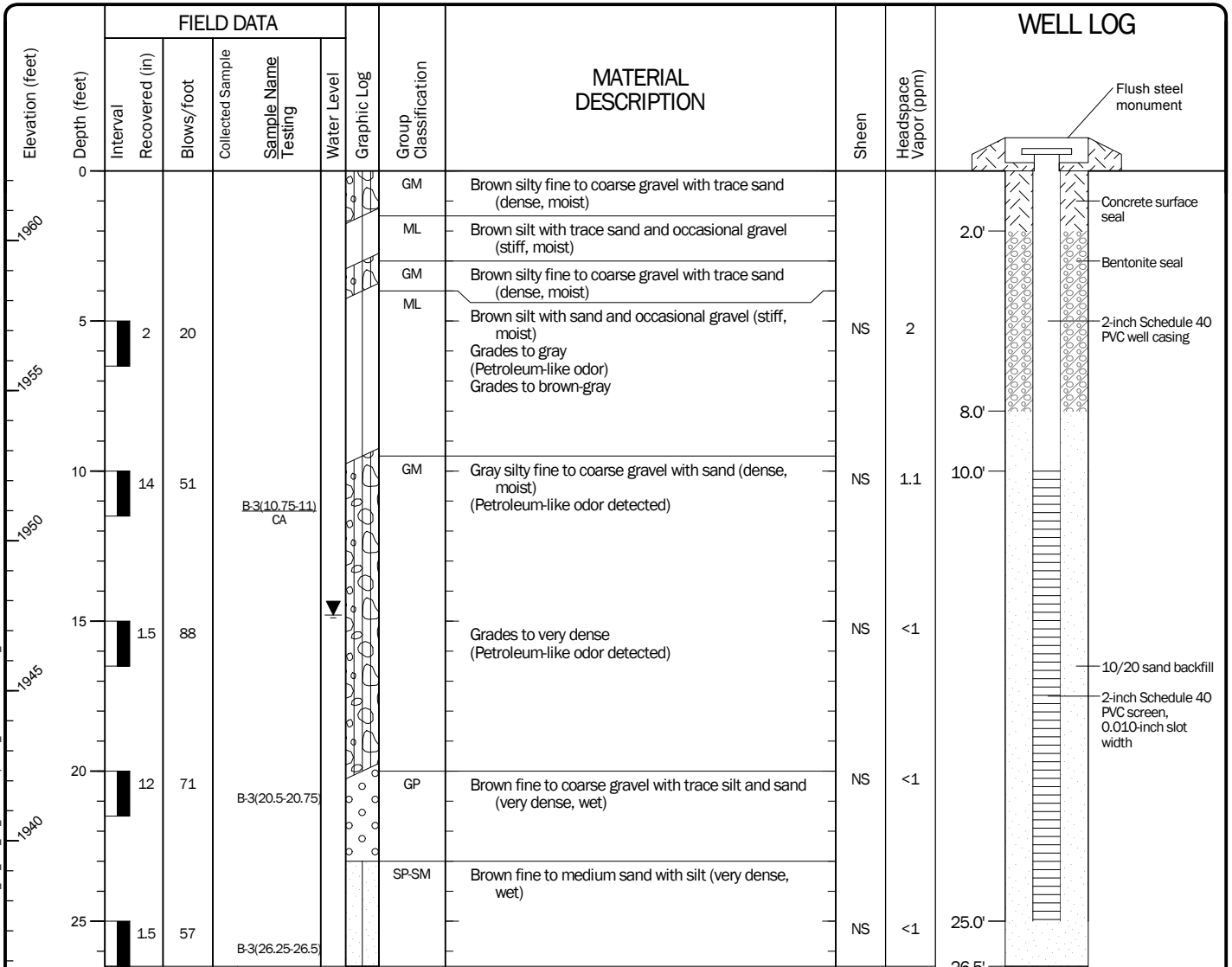
Log of Boring B-2



Project: Dawson Trucking
Project Location: Valley, Washington
Project Number: 0504-130-00

Spokane: Date: 2/19/17 Path: P:\0_0504130\GINT\050413000.GPJ DBTemplate:GEOENGINEERS_DF_STD_US_2017.GDT\GEB_ENVIRONMENTAL_STANDARD_NO_GW

Drilled	Start 2/2/2017	End 2/2/2017	Total Depth (ft)	26.5	Logged By Checked By	CMD SHL	Driller	Environmental West Exploration, Inc.	Drilling Method	Hollow-stem Auger					
Hammer Data	Cathead & Pulley System 140 (lbs) / 30 (in) Drop				Drilling Equipment			Mobile B-90		A 2 (in) well was installed on 2/2/2017 to a depth of 25 (ft).					
Surface Elevation (ft) Vertical Datum	1962.32 NAVD88				Top of Casing Elevation (ft)			Groundwater							
Easting (X) Northing (Y)	2381124.02 449514.27				Horizontal Datum			WA State Plane North NAD83		Date Measured	2/2/2017	Depth to Water (ft)	14.80	Elevation (ft)	1947.52
Notes:															



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

Log of Monitoring Well MW-2 (B-3)

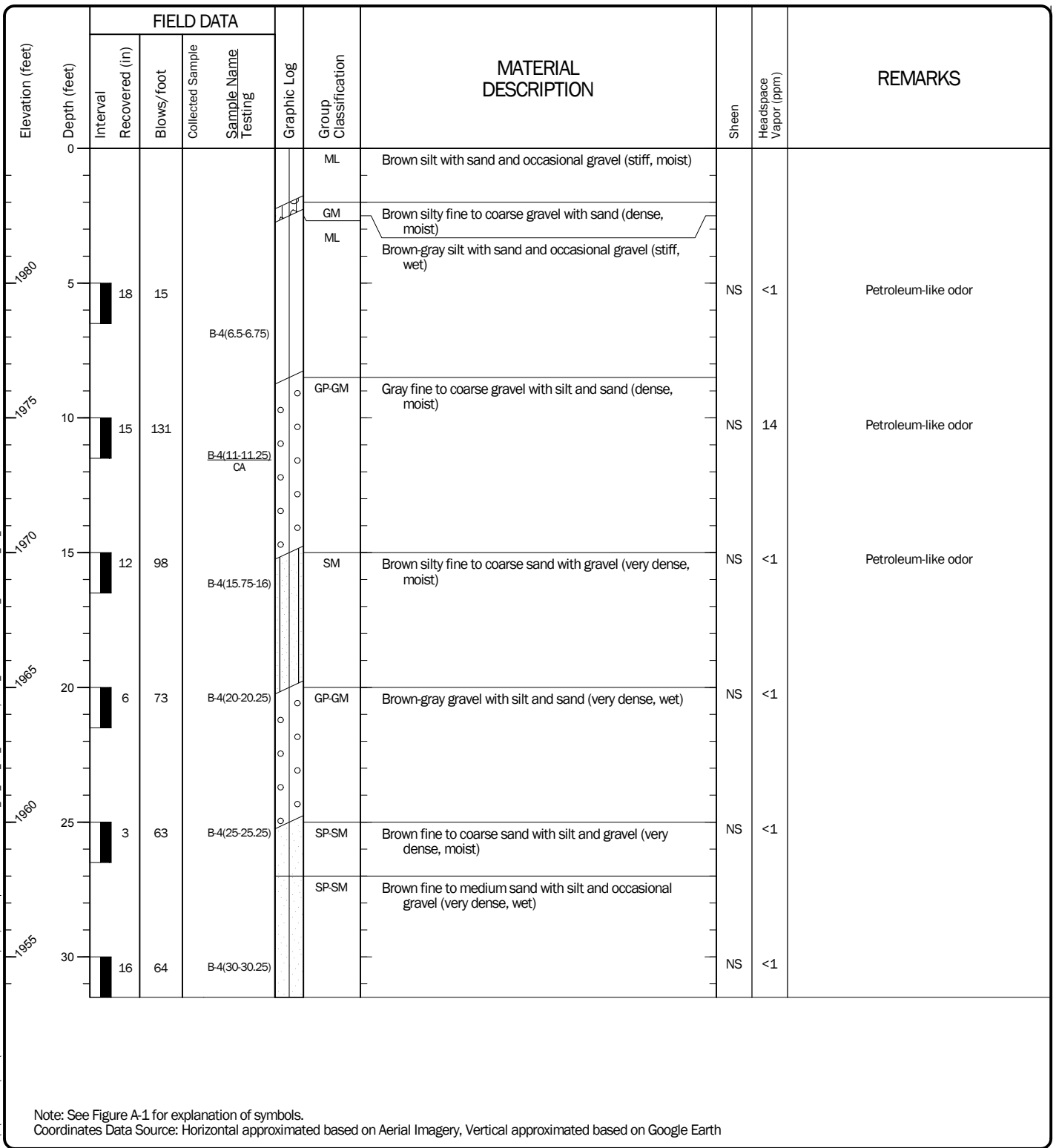


Project: Dawson Trucking
Project Location: Valley, Washington
Project Number: 0504-130-00

Figure A-4
Sheet 1 of 1

Spokane: Date: 2/19/17 Path: P:\0_0504130\GINT\050413000.GPJ DBTemplate:GEOENGINEERS_DF_STD_US_2017.GDT\GEB_ENVIRONMENTAL_WELL

Drilled	Start 2/1/2017	End 2/2/2017	Total Depth (ft)	31.5	Logged By Checked By	CMD SHL	Driller	Environmental West Exploration, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	1985 NAVD88			Hammer Data	Cathead & Pulley System 140 (lbs) / 30 (in) Drop			Drilling Equipment	Mobile B-90	
Easting (X) Northing (Y)	2381001.49 449554.87			System Datum	WA State Plane North NAD83			Groundwater observed at 29.5 feet at time of exploration		
Notes:										



Log of Boring B-4

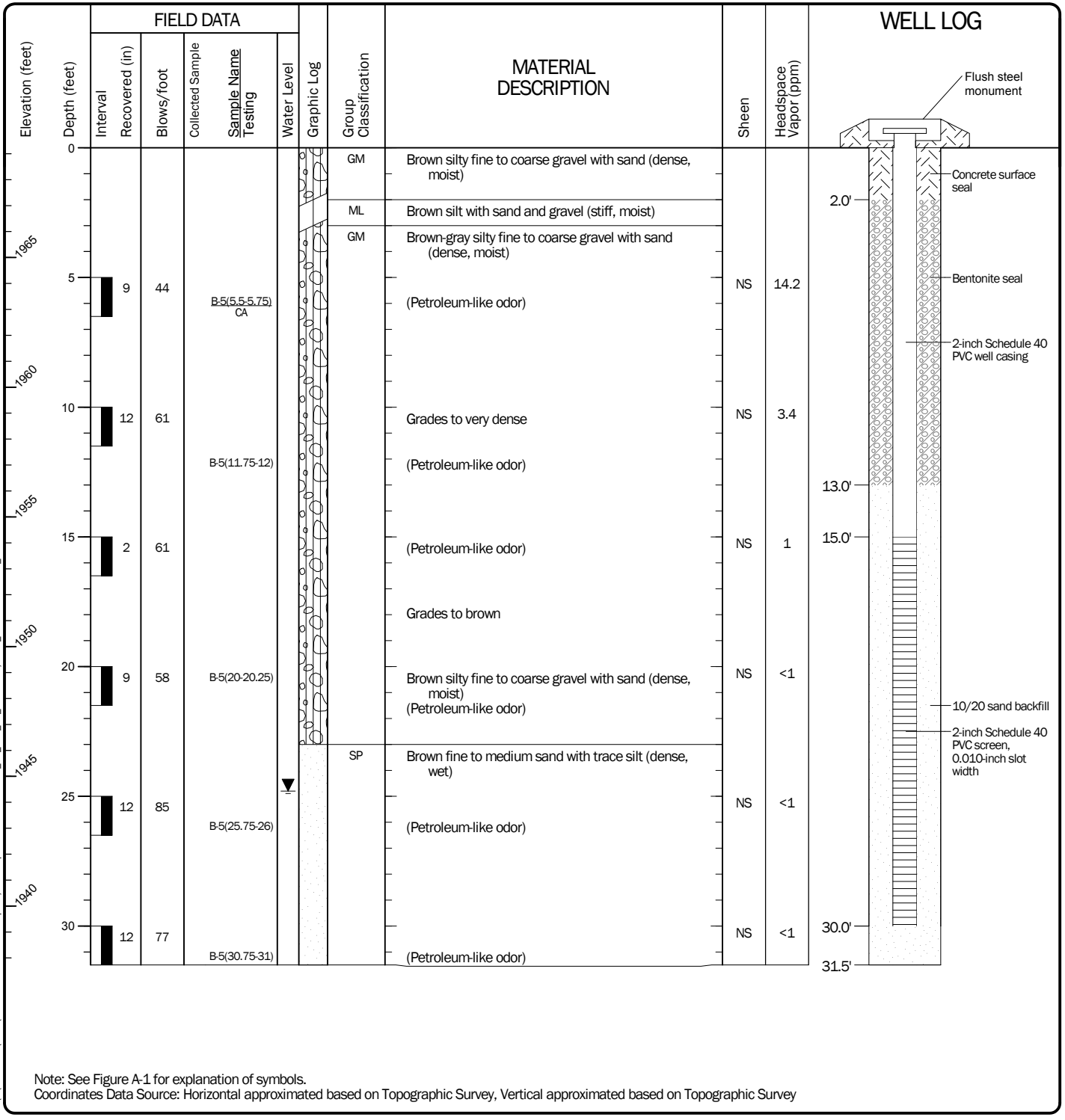


Project: Dawson Trucking
Project Location: Valley, Washington
Project Number: 0504-130-00

Figure A-5
Sheet 1 of 1

Spokane: Date: 2/19/17 Path: P:\0_0504130\GINT\050413000.GPJ DBTemplate:GEOENGINEERS_DF_STD_US_2017.GDT\GEE_ENVIRONMENTAL_STANDARD_NO_GW

Start Drilled	2/2/2017	End 2/2/2017	Total Depth (ft)	31.5	Logged By Checked By	CMD SHL	Driller	Environmental West Exploration, Inc.	Drilling Method	Hollow-stem Auger
Hammer Data	Cathead & Pulley System 140 (lbs) / 30 (in) Drop			Drilling Equipment	Mobile B-90			A 2 (in) well was installed on 2/2/2017 to a depth of 30 (ft).		
Surface Elevation (ft) Vertical Datum	1969.23 NAVD88		Top of Casing Elevation (ft)							
Easting (X) Northing (Y)	2381126.34 449595.8		Horizontal Datum		WA State Plane North NAD83		Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)	
						2/2/2017	24.80	1944.43		
Notes:										



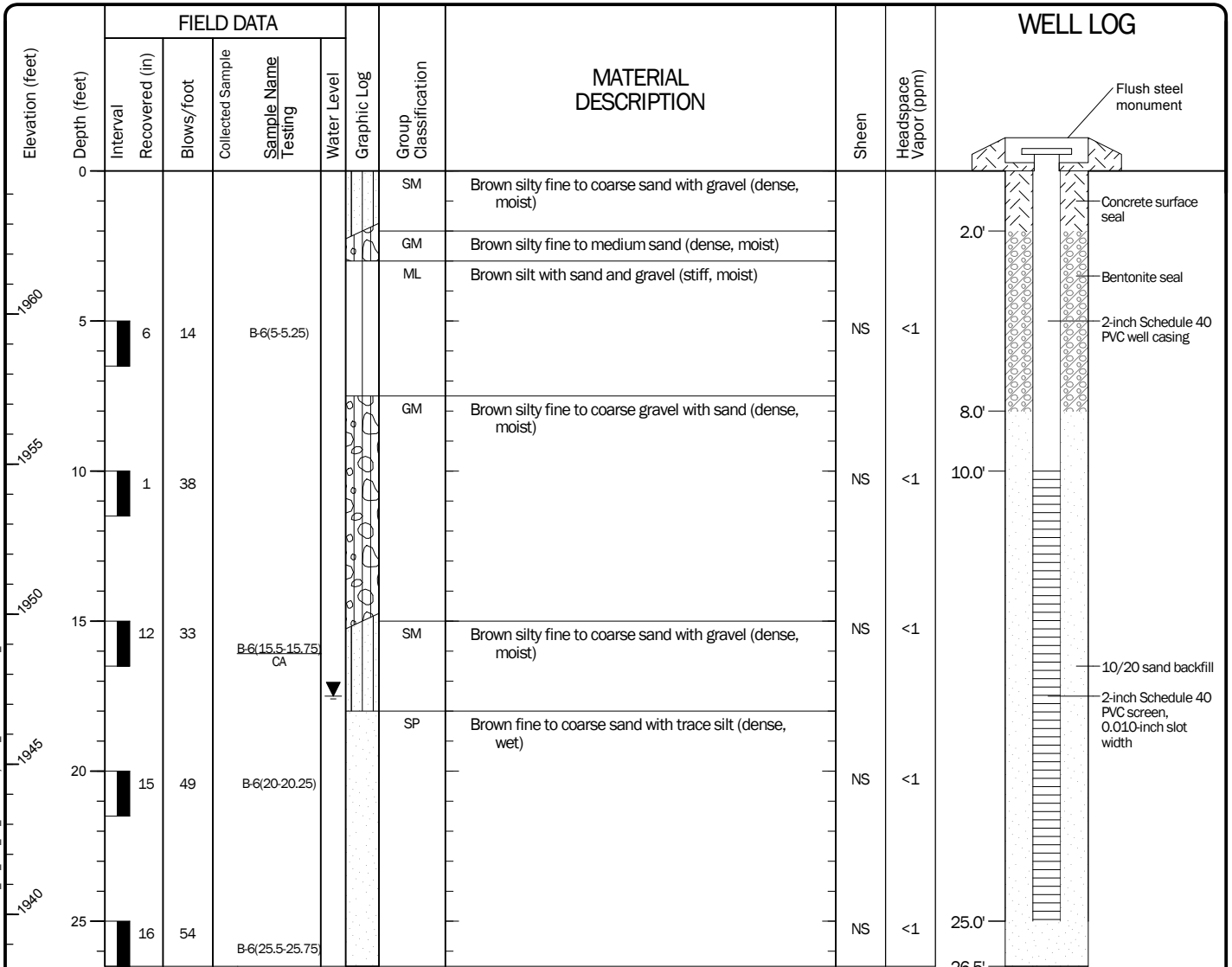
Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Topographic Survey, Vertical approximated based on Topographic Survey

Log of Monitoring Well MW-1 (B-5)



Project: Dawson Trucking
Project Location: Valley, Washington
Project Number: 0504-130-00

Start Drilled 2/3/2017	End 2/3/2017	Total Depth (ft) 26.5	Logged By Checked By CMD SHL	Driller Environmental West Exploration, Inc.	Drilling Method Hollow-stem Auger
Hammer Data Cathead & Pulley System 140 (lbs) / 30 (in) Drop		Drilling Equipment Mobile B-90		A 2 (in) well was installed on 2/3/2017 to a depth of 25 (ft).	
Surface Elevation (ft) Vertical Datum 1964.77 NAVD88		Top of Casing Elevation (ft)		Groundwater Date Measured 2/3/2017	
Easting (X) Northing (Y) 2380946.52 449534.04		Horizontal Datum WA State Plane North NAD83		Depth to Water (ft) 17.50 Elevation (ft) 1947.27	
Notes:					



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

Log of Monitoring Well MW-3 (B-6)



Project: Dawson Trucking
Project Location: Valley, Washington
Project Number: 0504-130-00


Spokane: Date: 2/19/17 Path: P:\0_0504130\GINT\050413000.GPJ DBTemplate:GEOENGINEERS_DF_STD_US_2017.GDT\GEE_ENVIRONMENTAL_WELL

Drilled	Start 2/3/2017	End 2/3/2017	Total Depth (ft)	3.5	Logged By Checked By	CMD SHL	Driller	Environmental West Exploration, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	1985 NAVD88			Hammer Data	Cathead & Pulley System 140 (lbs) / 30 (in) Drop			Drilling Equipment	Mobile B-90	
Easting (X) Northing (Y)	2381001.49 449504.99			System Datum	WA State Plane North NAD83			Groundwater observed at 3.5 feet at time of exploration		
Notes:										

Elevation (feet)	FIELD DATA					Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing						
0						GM	Brown silty fine to coarse gravel with sand (dense, moist)				Product encountered; two sample sets collected from B-7 cuttings
						ML	Brown silt with sand and occasional gravel (stiff, wet)				
									MS	70.4	

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

Spokane: Date: 2/19/17 Path: P:\0_0504130\GINT\050413000.GPJ DBTemplate:GEOENGINEERS_DF_STD_US_2017.GDT\GEB_ENVIRONMENTAL_STANDARD_NO_GW

Log of Boring B-7		
	Project: Dawson Trucking	Figure A-8 Sheet 1 of 1
	Project Location: Valley, Washington	
	Project Number: 0504-130-00	

Drilled	Start 2/3/2017	End 2/3/2017	Total Depth (ft)	21.5	Logged By Checked By	CMD SHL	Driller	Environmental West Exploration, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	1977 NAVD88			Hammer Data	Cathead & Pulley System 140 (lbs) / 30 (in) Drop			Drilling Equipment	Mobile B-90	
Easting (X) Northing (Y)	2381001.49 449558.49			System Datum	WA State Plane North NAD83			Groundwater observed at 17.5 feet at time of exploration		
Notes:										

Elevation (feet)	FIELD DATA					Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing					
1975	0					ML	Brown silt with trace sand and occasional gravel (stiff, moist)			
1970	5	15	17		B-8(6-6.25)	GM ML	Brown silty fine to coarse gravel with trace sand (dense, moist) Brown silt with trace sand and occasional gravel (stiff, moist)	NS	<1	
1965	10	5	19		B-8(10.25-10.5)	SP-SM	Brown fine to coarse sand with silt (medium dense, moist)	NS	<1	
1960	15	18	67		B-8(16.25-16.5) CA	SM	Brown silty sand with gravel (very dense, moist)	NS	<1	
	20	18	70		B-8(20-20.25)	SP	Grades with trace silt, wet Brown fine to coarse sand with trace silt (very dense, wet)	NS	<1	

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

Log of Boring B-8



Project: Dawson Trucking
Project Location: Valley, Washington
Project Number: 0504-130-00

Figure A-9
Sheet 1 of 1

Spokane: Date: 2/19/17 Path: P:\0_0504130\GINT\050413000.GPJ DBTemplate:GEOENGINEERS_DF_STD_US_2017.GDT\GEB_ENVIRONMENTAL_STANDARD_NO_GW

Drilled	Start 2/4/2017	End 2/4/2017	Total Depth (ft)	16.5	Logged By Checked By	CMD SHL	Driller	Environmental West Exploration, Inc.	Drilling Method	Hollow-stem Auger
Surface Elevation (ft) Vertical Datum	1985 NAVD88			Hammer Data	Cathead & Pulley System 140 (lbs) / 30 (in) Drop			Drilling Equipment	Mobile B-90	
Easting (X) Northing (Y)	2381001.49 449531.66			System Datum	WA State Plane North NAD83			Groundwater observed at 15 feet at time of exploration		
Notes:										

Elevation (feet)	Depth (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
		Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing						
0						GM	Silty fine to coarse gravel with sand (medium dense, moist)				
1980	5	4	20		B-9(5-5.25)			NS	<1		
1975	10	12	26		B-9(10.75-11) CA	SM	Brown silty fine to coarse sand with gravel (medium dense, wet)	NS	<1		
1970	15	1.5	60			SP-SM	Brown fine to medium sand with silt (very dense, wet)	NS	<1		

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

Log of Boring B-9



Project: Dawson Trucking
Project Location: Valley, Washington
Project Number: 0504-130-00

Figure A-10
Sheet 1 of 1

Spokane: Date: 2/19/17 Path: P:\0_0504130\GINT\050413000.GPJ DBTemplate:GEOENGINEERS_DF_STD_US_2017.GDT\GEB_ENVIRONMENTAL_STANDARD_NO_GW

APPENDIX B
Chemical Analytical Laboratory Reports

APPENDIX B CHEMICAL ANALYTICAL LABORATORY REPORTS

Samples

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

Analytical Data Review

The laboratory maintains an internal quality assurance/quality control (QA/QC) program as documented in its laboratory quality assurance manual. The laboratory uses a combination of blanks, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries, blank spike recoveries and blank spike duplicate recoveries to evaluate the analytical results. The laboratory also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The data quality goals were included in the two laboratory reports dated February 15, 2017.

Analytical Data Review Summary

During the February 2017 groundwater monitoring event, a duplicate sample was collected from MW 1 and designated MW-Dup:020817. Concentrations were similar in MW-1 and the duplicate sample. A trip blank was analyzed for VOCs. VOCs were not detected in the trip blank.

We reviewed the laboratory internal QA/QC in the context of data quality goals. TestAmerica reported the pH values in the properly preserved sample vials were outside the criteria for volatile analysis in groundwater samples: B-2:020417 and B-8:020317. Based on discussions with the laboratory, the samples had pH values greater than 2. TestAmerica believed the large amount sediment present in the samples caused an increased pH as well as elevated reporting levels. TestAmerica also noted elevated reporting levels for DRPH and volatile analyses in soil sample B-5(5.5-5.75). TestAmerica diluted this sample because high levels of diesel in samples causes surrogate failures, contamination/carryover and internal standard failures. Surrogate recovery was reported outside the control limits for both DRPH and volatile analysis in soil sample B-7 Cuttings. TestAmerica reported improper surrogate recovery was due to high levels of DRPH.

In summary, our review of the laboratory data and quality control meets criteria and the data are acceptable for the intended use.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Spokane

11922 East 1st Ave

Spokane, WA 99206

Tel: (509)924-9200

TestAmerica Job ID: 590-5485-1

Client Project/Site: Dawson/0504-130-00

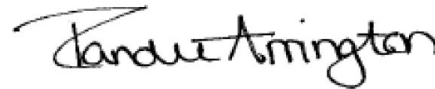
For:

GeoEngineers Inc

523 East Second Ave

Spokane, Washington 99202

Attn: Scott Lathen



Authorized for release by:

2/15/2017 11:52:26 AM

Randee Arrington, Project Manager II

(509)924-9200

randee.arrington@testamericainc.com

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

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

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11

12



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Sample Summary	4
Definitions	5
Client Sample Results	6
QC Sample Results	13
Chronicle	17
Certification Summary	22
Method Summary	23
Chain of Custody	24
Receipt Checklists	26

Case Narrative

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Job ID: 590-5485-1

Laboratory: TestAmerica Spokane

Narrative

Receipt

The samples were received on 2/7/2017 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.2° C.

Receipt Exceptions

The following sample was canceled for NWTPH-Dx by the client on 02/08/2017: Trip Blank (590-5485-13).

GC/MS VOA

Method 8260C: The following samples were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: B-2:020417 (590-5485-2) and B-8:020317 (590-5485-10). The sample was analyzed within 7 days per EPA recommendation.

Method 8260C: The following samples were diluted due to the presence of a large sediment layer: B-2:020417 (590-5485-2) and B-8:020317 (590-5485-10). Elevated reporting limits (RLs) are provided.

Method 8260C: Surrogate 1,2-Dichloroethane-d4 recovery for the following sample was outside control limits: (590-5485-D-8-A MSD). Evidence of matrix interference is present; therefore, re-extraction and re-analysis was not performed.

Method 8260C: The following sample was diluted due to the abundance of non-target analytes: B-5 (5.5-5.75) (590-5485-6). Elevated reporting limits (RLs) are provided.

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: Surrogate recovery for the following sample was outside control limits: B-7 Cuttings (590-5485-8). Evidence of matrix interference due to high target analytes is present; therefore, re-extraction and/or re-analysis was not performed.

Method NWTPH-Dx: Detected hydrocarbons in the oil range appear to be due to diesel overlap in the following sample: B-5 (5.5-5.75) (590-5485-6).

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.

VOA Prep

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

Sample Summary

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-5485-1	B-2 (25-25.25)	Solid	02/04/17 10:15	02/07/17 11:20
590-5485-2	B-2:020417	Water	02/04/17 11:10	02/07/17 11:20
590-5485-3	B-3 (10.75-11)	Solid	02/02/17 14:45	02/07/17 11:20
590-5485-4	B-4(11-11.25)	Solid	02/01/17 13:45	02/07/17 11:20
590-5485-5	B-4:020117	Water	02/01/17 16:25	02/07/17 11:20
590-5485-6	B-5 (5.5-5.75)	Solid	02/02/17 10:10	02/07/17 11:20
590-5485-7	B-6 (15.5-15.75)	Solid	02/03/17 13:20	02/07/17 11:20
590-5485-8	B-7 Cuttings	Solid	02/03/17 10:45	02/07/17 11:20
590-5485-9	B-8 (16.25-16.5)	Solid	02/03/17 08:30	02/07/17 11:20
590-5485-10	B-8:020317	Water	02/03/17 09:40	02/07/17 11:20
590-5485-11	B-9 (10.75-11)	Solid	02/04/17 12:10	02/07/17 11:20
590-5485-12	B-9:020417	Water	02/04/17 13:10	02/07/17 11:20
590-5485-13	Trip Blank	Water	02/01/17 00:00	02/07/17 11:20

Definitions/Glossary

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
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.
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.
α	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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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 Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Client Sample ID: B-2 (25-25.25)

Lab Sample ID: 590-5485-1

Date Collected: 02/04/17 10:15

Matrix: Solid

Date Received: 02/07/17 11:20

Percent Solids: 83.5

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.026		mg/Kg	☼	02/13/17 08:27	02/13/17 15:41	1
Ethylbenzene	ND		0.13		mg/Kg	☼	02/13/17 08:27	02/13/17 15:41	1
m,p-Xylene	ND		0.52		mg/Kg	☼	02/13/17 08:27	02/13/17 15:41	1
o-Xylene	ND		0.26		mg/Kg	☼	02/13/17 08:27	02/13/17 15:41	1
Toluene	ND		0.13		mg/Kg	☼	02/13/17 08:27	02/13/17 15:41	1
Xylenes, Total	ND		0.78		mg/Kg	☼	02/13/17 08:27	02/13/17 15:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		75 - 120	02/13/17 08:27	02/13/17 15:41	1
4-Bromofluorobenzene (Surr)	100		76 - 122	02/13/17 08:27	02/13/17 15:41	1
Dibromofluoromethane (Surr)	102		80 - 120	02/13/17 08:27	02/13/17 15:41	1
Toluene-d8 (Surr)	102		80 - 120	02/13/17 08:27	02/13/17 15:41	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	☼	02/09/17 11:23	02/09/17 14:39	1
Residual Range Organics (RRO) (C25-C36)	ND		29		mg/Kg	☼	02/09/17 11:23	02/09/17 14:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	95		50 - 150	02/09/17 11:23	02/09/17 14:39	1
n-Triacontane-d62	88		50 - 150	02/09/17 11:23	02/09/17 14:39	1

Client Sample ID: B-2:020417

Lab Sample ID: 590-5485-2

Date Collected: 02/04/17 11:10

Matrix: Water

Date Received: 02/07/17 11:20

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			02/08/17 17:20	2
Ethylbenzene	ND		2.0		ug/L			02/08/17 17:20	2
m,p-Xylene	ND		4.0		ug/L			02/08/17 17:20	2
o-Xylene	ND		2.0		ug/L			02/08/17 17:20	2
Toluene	ND		2.0		ug/L			02/08/17 17:20	2
Xylenes, Total	ND		6.0		ug/L			02/08/17 17:20	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		70 - 125		02/08/17 17:20	2
4-Bromofluorobenzene (Surr)	104		69 - 120		02/08/17 17:20	2
Dibromofluoromethane (Surr)	106		80 - 120		02/08/17 17:20	2
Toluene-d8 (Surr)	98		80 - 120		02/08/17 17:20	2

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		0.14		mg/L		02/13/17 10:38	02/13/17 13:17	1
Residual Range Organics (RRO) (C25-C36)	ND		0.23		mg/L		02/13/17 10:38	02/13/17 13:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	86		50 - 150	02/13/17 10:38	02/13/17 13:17	1

TestAmerica Spokane

Client Sample Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Client Sample ID: B-2:020417

Lab Sample ID: 590-5485-2

Date Collected: 02/04/17 11:10

Matrix: Water

Date Received: 02/07/17 11:20

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>n</i> -Triacontane-d62	90		50 - 150	02/13/17 10:38	02/13/17 13:17	1

Client Sample ID: B-3 (10.75-11)

Lab Sample ID: 590-5485-3

Date Collected: 02/02/17 14:45

Matrix: Solid

Date Received: 02/07/17 11:20

Percent Solids: 90.3

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg	☼	02/13/17 08:27	02/13/17 16:02	1
Ethylbenzene	ND		0.098		mg/Kg	☼	02/13/17 08:27	02/13/17 16:02	1
m,p-Xylene	ND		0.39		mg/Kg	☼	02/13/17 08:27	02/13/17 16:02	1
o-Xylene	ND		0.20		mg/Kg	☼	02/13/17 08:27	02/13/17 16:02	1
Toluene	ND		0.098		mg/Kg	☼	02/13/17 08:27	02/13/17 16:02	1
Xylenes, Total	ND		0.59		mg/Kg	☼	02/13/17 08:27	02/13/17 16:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>1,2</i> -Dichloroethane-d4 (Surr)	95		75 - 120	02/13/17 08:27	02/13/17 16:02	1
<i>4</i> -Bromofluorobenzene (Surr)	102		76 - 122	02/13/17 08:27	02/13/17 16:02	1
<i>Dibromofluoromethane</i> (Surr)	102		80 - 120	02/13/17 08:27	02/13/17 16:02	1
<i>Toluene-d8</i> (Surr)	104		80 - 120	02/13/17 08:27	02/13/17 16:02	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		11		mg/Kg	☼	02/09/17 11:23	02/09/17 14:57	1
Residual Range Organics (RRO) (C25-C36)	ND		26		mg/Kg	☼	02/09/17 11:23	02/09/17 14:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	96		50 - 150	02/09/17 11:23	02/09/17 14:57	1
<i>n</i> -Triacontane-d62	89		50 - 150	02/09/17 11:23	02/09/17 14:57	1

Client Sample ID: B-4(11-11.25)

Lab Sample ID: 590-5485-4

Date Collected: 02/01/17 13:45

Matrix: Solid

Date Received: 02/07/17 11:20

Percent Solids: 78.3

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.029		mg/Kg	☼	02/13/17 08:27	02/13/17 16:24	1
Ethylbenzene	ND		0.15		mg/Kg	☼	02/13/17 08:27	02/13/17 16:24	1
m,p-Xylene	ND		0.58		mg/Kg	☼	02/13/17 08:27	02/13/17 16:24	1
o-Xylene	ND		0.29		mg/Kg	☼	02/13/17 08:27	02/13/17 16:24	1
Toluene	ND		0.15		mg/Kg	☼	02/13/17 08:27	02/13/17 16:24	1
Xylenes, Total	ND		0.87		mg/Kg	☼	02/13/17 08:27	02/13/17 16:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>1,2</i> -Dichloroethane-d4 (Surr)	98		75 - 120	02/13/17 08:27	02/13/17 16:24	1
<i>4</i> -Bromofluorobenzene (Surr)	106		76 - 122	02/13/17 08:27	02/13/17 16:24	1
<i>Dibromofluoromethane</i> (Surr)	97		80 - 120	02/13/17 08:27	02/13/17 16:24	1
<i>Toluene-d8</i> (Surr)	98		80 - 120	02/13/17 08:27	02/13/17 16:24	1

TestAmerica Spokane

Client Sample Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Client Sample ID: B-4(11-11.25)

Lab Sample ID: 590-5485-4

Date Collected: 02/01/17 13:45

Matrix: Solid

Date Received: 02/07/17 11:20

Percent Solids: 78.3

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	☼	02/09/17 11:23	02/09/17 15:15	1
Residual Range Organics (RRO) (C25-C36)	ND		30		mg/Kg	☼	02/09/17 11:23	02/09/17 15:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	101		50 - 150				02/09/17 11:23	02/09/17 15:15	1
<i>n</i> -Triacontane-d62	97		50 - 150				02/09/17 11:23	02/09/17 15:15	1

Client Sample ID: B-4:020117

Lab Sample ID: 590-5485-5

Date Collected: 02/01/17 16:25

Matrix: Water

Date Received: 02/07/17 11:20

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.20		ug/L			02/08/17 18:01	1
Ethylbenzene	ND		1.0		ug/L			02/08/17 18:01	1
m,p-Xylene	3.7		2.0		ug/L			02/08/17 18:01	1
<i>o</i> -Xylene	ND		1.0		ug/L			02/08/17 18:01	1
Toluene	ND		1.0		ug/L			02/08/17 18:01	1
Xylenes, Total	4.3		3.0		ug/L			02/08/17 18:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>1,2</i> -Dichloroethane-d4 (Surr)	104		70 - 125					02/08/17 18:01	1
<i>4</i> -Bromofluorobenzene (Surr)	106		69 - 120					02/08/17 18:01	1
<i>Dibromofluoromethane</i> (Surr)	107		80 - 120					02/08/17 18:01	1
<i>Toluene-d8</i> (Surr)	95		80 - 120					02/08/17 18:01	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)	1.1		0.13		mg/L		02/13/17 10:38	02/13/17 13:34	1
Residual Range Organics (RRO) (C25-C36)	ND		0.22		mg/L		02/13/17 10:38	02/13/17 13:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	89		50 - 150				02/13/17 10:38	02/13/17 13:34	1
<i>n</i> -Triacontane-d62	90		50 - 150				02/13/17 10:38	02/13/17 13:34	1

Client Sample ID: B-5 (5.5-5.75)

Lab Sample ID: 590-5485-6

Date Collected: 02/02/17 10:10

Matrix: Solid

Date Received: 02/07/17 11:20

Percent Solids: 87.8

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.55		mg/Kg	☼	02/13/17 08:29	02/13/17 16:46	20
Ethylbenzene	ND		2.7		mg/Kg	☼	02/13/17 08:29	02/13/17 16:46	20
m,p-Xylene	ND		11		mg/Kg	☼	02/13/17 08:29	02/13/17 16:46	20
<i>o</i> -Xylene	ND		5.5		mg/Kg	☼	02/13/17 08:29	02/13/17 16:46	20
Toluene	ND		2.7		mg/Kg	☼	02/13/17 08:29	02/13/17 16:46	20
Xylenes, Total	ND		16		mg/Kg	☼	02/13/17 08:29	02/13/17 16:46	20

TestAmerica Spokane

Client Sample Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Client Sample ID: B-5 (5.5-5.75)

Date Collected: 02/02/17 10:10

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-6

Matrix: Solid

Percent Solids: 87.8

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		75 - 120	02/13/17 08:29	02/13/17 16:46	20
4-Bromofluorobenzene (Surr)	111		76 - 122	02/13/17 08:29	02/13/17 16:46	20
Dibromofluoromethane (Surr)	104		80 - 120	02/13/17 08:29	02/13/17 16:46	20
Toluene-d8 (Surr)	97		80 - 120	02/13/17 08:29	02/13/17 16:46	20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	3400		11		mg/Kg	☼	02/09/17 11:23	02/09/17 15:33	1
Residual Range Organics (RRO) (C25-C36)	66		27		mg/Kg	☼	02/09/17 11:23	02/09/17 15:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	78		50 - 150	02/09/17 11:23	02/09/17 15:33	1
n-Triacontane-d62	99		50 - 150	02/09/17 11:23	02/09/17 15:33	1

Client Sample ID: B-6 (15.5-15.75)

Date Collected: 02/03/17 13:20

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-7

Matrix: Solid

Percent Solids: 87.5

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg	☼	02/13/17 08:29	02/13/17 17:08	1
Ethylbenzene	ND		0.13		mg/Kg	☼	02/13/17 08:29	02/13/17 17:08	1
m,p-Xylene	ND		0.51		mg/Kg	☼	02/13/17 08:29	02/13/17 17:08	1
o-Xylene	ND		0.25		mg/Kg	☼	02/13/17 08:29	02/13/17 17:08	1
Toluene	ND		0.13		mg/Kg	☼	02/13/17 08:29	02/13/17 17:08	1
Xylenes, Total	ND		0.76		mg/Kg	☼	02/13/17 08:29	02/13/17 17:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		75 - 120	02/13/17 08:29	02/13/17 17:08	1
4-Bromofluorobenzene (Surr)	112		76 - 122	02/13/17 08:29	02/13/17 17:08	1
Dibromofluoromethane (Surr)	98		80 - 120	02/13/17 08:29	02/13/17 17:08	1
Toluene-d8 (Surr)	99		80 - 120	02/13/17 08:29	02/13/17 17:08	1

Method: NWT PH-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		11		mg/Kg	☼	02/09/17 11:23	02/09/17 15:51	1
Residual Range Organics (RRO) (C25-C36)	ND		27		mg/Kg	☼	02/09/17 11:23	02/09/17 15:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	94		50 - 150	02/09/17 11:23	02/09/17 15:51	1
n-Triacontane-d62	92		50 - 150	02/09/17 11:23	02/09/17 15:51	1

Client Sample ID: B-7 Cuttings

Date Collected: 02/03/17 10:45

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-8

Matrix: Solid

Percent Solids: 73.0

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	F1 F2	0.42		mg/Kg	☼	02/13/17 08:29	02/13/17 17:30	10

TestAmerica Spokane

Client Sample Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Client Sample ID: B-7 Cuttings

Lab Sample ID: 590-5485-8

Date Collected: 02/03/17 10:45

Matrix: Solid

Date Received: 02/07/17 11:20

Percent Solids: 73.0

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	3.6		2.1		mg/Kg	☼	02/13/17 08:29	02/13/17 17:30	10
m,p-Xylene	17		8.4		mg/Kg	☼	02/13/17 08:29	02/13/17 17:30	10
o-Xylene	9.9		4.2		mg/Kg	☼	02/13/17 08:29	02/13/17 17:30	10
Toluene	ND	F1 F2	2.1		mg/Kg	☼	02/13/17 08:29	02/13/17 17:30	10
Xylenes, Total	27		13		mg/Kg	☼	02/13/17 08:29	02/13/17 17:30	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 120	02/13/17 08:29	02/13/17 17:30	10
4-Bromofluorobenzene (Surr)	114		76 - 122	02/13/17 08:29	02/13/17 17:30	10
Dibromofluoromethane (Surr)	95		80 - 120	02/13/17 08:29	02/13/17 17:30	10
Toluene-d8 (Surr)	97		80 - 120	02/13/17 08:29	02/13/17 17:30	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)	14000		130		mg/Kg	☼	02/09/17 11:23	02/09/17 16:08	10
Residual Range Organics (RRO) (C25-C36)	ND		320		mg/Kg	☼	02/09/17 11:23	02/09/17 16:08	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	1205	X	50 - 150	02/09/17 11:23	02/09/17 16:08	10
n-Triacontane-d62	95		50 - 150	02/09/17 11:23	02/09/17 16:08	10

Client Sample ID: B-8 (16.25-16.5)

Lab Sample ID: 590-5485-9

Date Collected: 02/03/17 08:30

Matrix: Solid

Date Received: 02/07/17 11:20

Percent Solids: 89.5

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg	☼	02/13/17 08:29	02/14/17 14:29	1
Ethylbenzene	ND		0.12		mg/Kg	☼	02/13/17 08:29	02/14/17 14:29	1
m,p-Xylene	ND		0.47		mg/Kg	☼	02/13/17 08:29	02/14/17 14:29	1
o-Xylene	ND		0.23		mg/Kg	☼	02/13/17 08:29	02/14/17 14:29	1
Toluene	ND		0.12		mg/Kg	☼	02/13/17 08:29	02/14/17 14:29	1
Xylenes, Total	ND		0.70		mg/Kg	☼	02/13/17 08:29	02/14/17 14:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		75 - 120	02/13/17 08:29	02/14/17 14:29	1
4-Bromofluorobenzene (Surr)	97		76 - 122	02/13/17 08:29	02/14/17 14:29	1
Dibromofluoromethane (Surr)	101		80 - 120	02/13/17 08:29	02/14/17 14:29	1
Toluene-d8 (Surr)	102		80 - 120	02/13/17 08:29	02/14/17 14:29	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		11		mg/Kg	☼	02/09/17 11:23	02/09/17 16:26	1
Residual Range Organics (RRO) (C25-C36)	ND		26		mg/Kg	☼	02/09/17 11:23	02/09/17 16:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	103		50 - 150	02/09/17 11:23	02/09/17 16:26	1
n-Triacontane-d62	97		50 - 150	02/09/17 11:23	02/09/17 16:26	1

TestAmerica Spokane

Client Sample Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Client Sample ID: B-8:020317

Lab Sample ID: 590-5485-10

Date Collected: 02/03/17 09:40

Matrix: Water

Date Received: 02/07/17 11:20

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			02/08/17 18:22	2
Ethylbenzene	ND		2.0		ug/L			02/08/17 18:22	2
m,p-Xylene	ND		4.0		ug/L			02/08/17 18:22	2
o-Xylene	ND		2.0		ug/L			02/08/17 18:22	2
Toluene	ND		2.0		ug/L			02/08/17 18:22	2
Xylenes, Total	ND		6.0		ug/L			02/08/17 18:22	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		70 - 125		02/08/17 18:22	2
4-Bromofluorobenzene (Surr)	106		69 - 120		02/08/17 18:22	2
Dibromofluoromethane (Surr)	107		80 - 120		02/08/17 18:22	2
Toluene-d8 (Surr)	99		80 - 120		02/08/17 18:22	2

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)	0.25		0.15		mg/L		02/13/17 10:38	02/13/17 13:51	1
Residual Range Organics (RRO) (C25-C36)	ND		0.24		mg/L		02/13/17 10:38	02/13/17 13:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	90		50 - 150	02/13/17 10:38	02/13/17 13:51	1
n-Triacontane-d62	91		50 - 150	02/13/17 10:38	02/13/17 13:51	1

Client Sample ID: B-9 (10.75-11)

Lab Sample ID: 590-5485-11

Date Collected: 02/04/17 12:10

Matrix: Solid

Date Received: 02/07/17 11:20

Percent Solids: 89.1

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg	☼	02/13/17 08:29	02/14/17 14:50	1
Ethylbenzene	ND		0.12		mg/Kg	☼	02/13/17 08:29	02/14/17 14:50	1
m,p-Xylene	ND		0.49		mg/Kg	☼	02/13/17 08:29	02/14/17 14:50	1
o-Xylene	ND		0.24		mg/Kg	☼	02/13/17 08:29	02/14/17 14:50	1
Toluene	ND		0.12		mg/Kg	☼	02/13/17 08:29	02/14/17 14:50	1
Xylenes, Total	ND		0.73		mg/Kg	☼	02/13/17 08:29	02/14/17 14:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		75 - 120	02/13/17 08:29	02/14/17 14:50	1
4-Bromofluorobenzene (Surr)	95		76 - 122	02/13/17 08:29	02/14/17 14:50	1
Dibromofluoromethane (Surr)	105		80 - 120	02/13/17 08:29	02/14/17 14:50	1
Toluene-d8 (Surr)	101		80 - 120	02/13/17 08:29	02/14/17 14:50	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		11		mg/Kg	☼	02/09/17 11:23	02/09/17 17:00	1
Residual Range Organics (RRO) (C25-C36)	ND		28		mg/Kg	☼	02/09/17 11:23	02/09/17 17:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	101		50 - 150	02/09/17 11:23	02/09/17 17:00	1

TestAmerica Spokane

Client Sample Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Client Sample ID: B-9 (10.75-11)

Lab Sample ID: 590-5485-11

Date Collected: 02/04/17 12:10

Matrix: Solid

Date Received: 02/07/17 11:20

Percent Solids: 89.1

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Triacontane-d62	94		50 - 150	02/09/17 11:23	02/09/17 17:00	1

Client Sample ID: B-9:020417

Lab Sample ID: 590-5485-12

Date Collected: 02/04/17 13:10

Matrix: Water

Date Received: 02/07/17 11:20

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.20		ug/L			02/08/17 18:42	1
Ethylbenzene	ND		1.0		ug/L			02/08/17 18:42	1
m,p-Xylene	ND		2.0		ug/L			02/08/17 18:42	1
o-Xylene	ND		1.0		ug/L			02/08/17 18:42	1
Toluene	ND		1.0		ug/L			02/08/17 18:42	1
Xylenes, Total	ND		3.0		ug/L			02/08/17 18:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		70 - 125		02/08/17 18:42	1
4-Bromofluorobenzene (Surr)	104		69 - 120		02/08/17 18:42	1
Dibromofluoromethane (Surr)	106		80 - 120		02/08/17 18:42	1
Toluene-d8 (Surr)	95		80 - 120		02/08/17 18:42	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		0.14		mg/L		02/13/17 10:38	02/13/17 14:08	1
Residual Range Organics (RRO) (C25-C36)	ND		0.23		mg/L		02/13/17 10:38	02/13/17 14:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	86		50 - 150	02/13/17 10:38	02/13/17 14:08	1
n-Triacontane-d62	90		50 - 150	02/13/17 10:38	02/13/17 14:08	1

Client Sample ID: Trip Blank

Lab Sample ID: 590-5485-13

Date Collected: 02/01/17 00:00

Matrix: Water

Date Received: 02/07/17 11:20

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.20		ug/L			02/08/17 19:03	1
Ethylbenzene	ND		1.0		ug/L			02/08/17 19:03	1
m,p-Xylene	ND		2.0		ug/L			02/08/17 19:03	1
o-Xylene	ND		1.0		ug/L			02/08/17 19:03	1
Toluene	ND		1.0		ug/L			02/08/17 19:03	1
Xylenes, Total	ND		3.0		ug/L			02/08/17 19:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		70 - 125		02/08/17 19:03	1
4-Bromofluorobenzene (Surr)	102		69 - 120		02/08/17 19:03	1
Dibromofluoromethane (Surr)	107		80 - 120		02/08/17 19:03	1
Toluene-d8 (Surr)	98		80 - 120		02/08/17 19:03	1

TestAmerica Spokane

QC Sample Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 590-10651/5

Matrix: Water

Analysis Batch: 10651

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.20		ug/L			02/08/17 13:46	1
Ethylbenzene	ND		1.0		ug/L			02/08/17 13:46	1
m,p-Xylene	ND		2.0		ug/L			02/08/17 13:46	1
o-Xylene	ND		1.0		ug/L			02/08/17 13:46	1
Toluene	ND		1.0		ug/L			02/08/17 13:46	1
Xylenes, Total	ND		3.0		ug/L			02/08/17 13:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		70 - 125		02/08/17 13:46	1
4-Bromofluorobenzene (Surr)	103		69 - 120		02/08/17 13:46	1
Dibromofluoromethane (Surr)	106		80 - 120		02/08/17 13:46	1
Toluene-d8 (Surr)	99		80 - 120		02/08/17 13:46	1

Lab Sample ID: LCS 590-10651/1003

Matrix: Water

Analysis Batch: 10651

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	10.2		ug/L		102	80 - 120
Ethylbenzene	10.0	9.53		ug/L		95	80 - 120
m,p-Xylene	10.0	9.78		ug/L		98	80 - 120
o-Xylene	10.0	9.85		ug/L		99	80 - 120
Toluene	10.0	9.67		ug/L		97	80 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		70 - 125
4-Bromofluorobenzene (Surr)	103		69 - 120
Dibromofluoromethane (Surr)	102		80 - 120
Toluene-d8 (Surr)	98		80 - 120

Lab Sample ID: MB 590-10708/1-A

Matrix: Solid

Analysis Batch: 10713

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 10708

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		02/13/17 08:27	02/13/17 11:00	1
Ethylbenzene	ND		0.10		mg/Kg		02/13/17 08:27	02/13/17 11:00	1
m,p-Xylene	ND		0.40		mg/Kg		02/13/17 08:27	02/13/17 11:00	1
o-Xylene	ND		0.20		mg/Kg		02/13/17 08:27	02/13/17 11:00	1
Toluene	ND		0.10		mg/Kg		02/13/17 08:27	02/13/17 11:00	1
Xylenes, Total	ND		0.60		mg/Kg		02/13/17 08:27	02/13/17 11:00	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		75 - 120	02/13/17 08:27	02/13/17 11:00	1
4-Bromofluorobenzene (Surr)	108		76 - 122	02/13/17 08:27	02/13/17 11:00	1
Dibromofluoromethane (Surr)	106		80 - 120	02/13/17 08:27	02/13/17 11:00	1
Toluene-d8 (Surr)	96		80 - 120	02/13/17 08:27	02/13/17 11:00	1

TestAmerica Spokane

QC Sample Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Lab Sample ID: LCS 590-10708/2-A

Matrix: Solid

Analysis Batch: 10713

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 10708

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	
Benzene	0.500	0.575		mg/Kg		115	76 - 123	
Ethylbenzene	0.500	0.551		mg/Kg		110	77 - 121	
m,p-Xylene	0.500	0.545		mg/Kg		109	78 - 124	
o-Xylene	0.500	0.548		mg/Kg		110	77 - 129	
Toluene	0.500	0.557		mg/Kg		111	77 - 125	

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	104		75 - 120
4-Bromofluorobenzene (Surr)	100		76 - 122
Dibromofluoromethane (Surr)	106		80 - 120
Toluene-d8 (Surr)	100		80 - 120

Lab Sample ID: 590-5485-8 MS

Matrix: Solid

Analysis Batch: 10713

Client Sample ID: B-7 Cuttings

Prep Type: Total/NA

Prep Batch: 10708

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec. Limits	
				Result	Qualifier					
Benzene	ND	F1 F2	0.764	3.27	F1	mg/Kg	*	400	72 - 120	
Ethylbenzene	3.6		0.764	9.26	4	mg/Kg	*	740	50 - 150	
m,p-Xylene	17		0.764	33.3	4	mg/Kg	*	2124	50 - 150	
o-Xylene	9.9		0.764	20.1	4	mg/Kg	*	1338	50 - 150	
Toluene	ND	F1 F2	0.764	3.78	F1	mg/Kg	*	494	75.6 - 120	

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	76		75 - 120
4-Bromofluorobenzene (Surr)	116		76 - 122
Dibromofluoromethane (Surr)	90		80 - 120
Toluene-d8 (Surr)	104		80 - 120

Lab Sample ID: 590-5485-8 MSD

Matrix: Solid

Analysis Batch: 10713

Client Sample ID: B-7 Cuttings

Prep Type: Total/NA

Prep Batch: 10708

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec. Limits		RPD	
				Result	Qualifier						RPD	Limit
Benzene	ND	F1 F2	0.808	2.11	F1 F2	mg/Kg	*	235	72 - 120	43	29.5	
Ethylbenzene	3.6		0.808	8.45	4	mg/Kg	*	599	50 - 150	9	25	
m,p-Xylene	17		0.808	34.4	4	mg/Kg	*	2149	50 - 150	3	25	
o-Xylene	9.9		0.808	19.7	4	mg/Kg	*	1219	50 - 150	2	25	
Toluene	ND	F1 F2	0.808	2.13	F1 F2	mg/Kg	*	264	75.6 - 120	56	27	

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	72	X	75 - 120
4-Bromofluorobenzene (Surr)	111		76 - 122
Dibromofluoromethane (Surr)	91		80 - 120
Toluene-d8 (Surr)	104		80 - 120

TestAmerica Spokane

QC Sample Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

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

Lab Sample ID: MB 590-10672/1-A
Matrix: Solid
Analysis Batch: 10676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 10672

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		10		mg/Kg		02/09/17 11:23	02/09/17 13:46	1
Residual Range Organics (RRO) (C25-C36)	ND		25		mg/Kg		02/09/17 11:23	02/09/17 13:46	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	106		50 - 150				02/09/17 11:23	02/09/17 13:46	1
<i>n</i> -Triacontane-d62	95		50 - 150				02/09/17 11:23	02/09/17 13:46	1

Lab Sample ID: LCS 590-10672/2-A
Matrix: Solid
Analysis Batch: 10676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 10672

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	67.1	68.8		mg/Kg		103	50 - 150
Residual Range Organics (RRO) (C25-C36)	66.8	68.6		mg/Kg		103	50 - 150
Surrogate	%Recovery	LCS Qualifier	Limits				
<i>o</i> -Terphenyl	106		50 - 150				
<i>n</i> -Triacontane-d62	102		50 - 150				

Lab Sample ID: 590-5485-1 DU
Matrix: Solid
Analysis Batch: 10676

Client Sample ID: B-2 (25-25.25)
Prep Type: Total/NA
Prep Batch: 10672

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Diesel Range Organics (DRO) (C10-C25)	ND		ND		mg/Kg	⊛	NC	40
Residual Range Organics (RRO) (C25-C36)	ND		ND		mg/Kg	⊛	4	40
Surrogate	%Recovery	DU Qualifier	Limits					
<i>o</i> -Terphenyl	97		50 - 150					
<i>n</i> -Triacontane-d62	92		50 - 150					

Lab Sample ID: MB 590-10710/1-A
Matrix: Water
Analysis Batch: 10715

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 10710

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.12		mg/L		02/13/17 10:38	02/13/17 12:24	1
Residual Range Organics (RRO) (C25-C36)	ND		0.20		mg/L		02/13/17 10:38	02/13/17 12:24	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	91		50 - 150				02/13/17 10:38	02/13/17 12:24	1

TestAmerica Spokane

QC Sample Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

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

Lab Sample ID: MB 590-10710/1-A

Matrix: Water

Analysis Batch: 10715

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 10710

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
<i>n</i> -Triacontane-d62	95		50 - 150	02/13/17 10:38	02/13/17 12:24	1

Lab Sample ID: LCS 590-10710/2-A

Matrix: Water

Analysis Batch: 10715

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 10710

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	
							LCS	LCS
Diesel Range Organics (DRO) (C10-C25)	1.61	1.20		mg/L		75	50 - 150	
Residual Range Organics (RRO) (C25-C36)	1.60	1.51		mg/L		94	50 - 150	

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	87		50 - 150
<i>n</i> -Triacontane-d62	87		50 - 150

Lab Sample ID: LCSD 590-10710/3-A

Matrix: Water

Analysis Batch: 10715

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 10710

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits		RPD	
							RPD	Limit		
Diesel Range Organics (DRO) (C10-C25)	1.61	1.22		mg/L		76	50 - 150	1	25	
Residual Range Organics (RRO) (C25-C36)	1.60	1.51		mg/L		94	50 - 150	0	25	

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	88		50 - 150
<i>n</i> -Triacontane-d62	92		50 - 150

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Client Sample ID: B-2 (25-25.25)

Date Collected: 02/04/17 10:15

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-1

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			10673	02/09/17 11:25	NMI	TAL SPK

Client Sample ID: B-2 (25-25.25)

Date Collected: 02/04/17 10:15

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-1

Matrix: Solid

Percent Solids: 83.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.464 g	5 mL	10708	02/13/17 08:27	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	10713	02/13/17 15:41	MRS	TAL SPK
Total/NA	Prep	3550C			15.43 g	5 mL	10672	02/09/17 11:23	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10676	02/09/17 14:39	NMI	TAL SPK

Client Sample ID: B-2:020417

Date Collected: 02/04/17 11:10

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		2	43 mL	43 mL	10651	02/08/17 17:20	MRS	TAL SPK
Total/NA	Prep	3510C			215.1 mL	2 mL	10710	02/13/17 10:38	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10715	02/13/17 13:17	NMI	TAL SPK

Client Sample ID: B-3 (10.75-11)

Date Collected: 02/02/17 14:45

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-3

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			10673	02/09/17 11:25	NMI	TAL SPK

Client Sample ID: B-3 (10.75-11)

Date Collected: 02/02/17 14:45

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-3

Matrix: Solid

Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.327 g	5 mL	10708	02/13/17 08:27	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	10713	02/13/17 16:02	MRS	TAL SPK
Total/NA	Prep	3550C			15.68 g	5 mL	10672	02/09/17 11:23	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10676	02/09/17 14:57	NMI	TAL SPK

TestAmerica Spokane

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Client Sample ID: B-4(11-11.25)

Date Collected: 02/01/17 13:45
Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-4

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			10673	02/09/17 11:25	NMI	TAL SPK

Client Sample ID: B-4(11-11.25)

Date Collected: 02/01/17 13:45
Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-4

Matrix: Solid
Percent Solids: 78.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.412 g	5 mL	10708	02/13/17 08:27	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	10713	02/13/17 16:24	MRS	TAL SPK
Total/NA	Prep	3550C			16.08 g	5 mL	10672	02/09/17 11:23	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10676	02/09/17 15:15	NMI	TAL SPK

Client Sample ID: B-4:020117

Date Collected: 02/01/17 16:25
Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	10651	02/08/17 18:01	MRS	TAL SPK
Total/NA	Prep	3510C			231.1 mL	2 mL	10710	02/13/17 10:38	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10715	02/13/17 13:34	NMI	TAL SPK

Client Sample ID: B-5 (5.5-5.75)

Date Collected: 02/02/17 10:10
Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-6

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			10673	02/09/17 11:25	NMI	TAL SPK

Client Sample ID: B-5 (5.5-5.75)

Date Collected: 02/02/17 10:10
Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-6

Matrix: Solid
Percent Solids: 87.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.649 g	5 mL	10708	02/13/17 08:29	MRS	TAL SPK
Total/NA	Analysis	8260C		20	0.86 mL	43 mL	10713	02/13/17 16:46	MRS	TAL SPK
Total/NA	Prep	3550C			15.68 g	5 mL	10672	02/09/17 11:23	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10676	02/09/17 15:33	NMI	TAL SPK

TestAmerica Spokane

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Client Sample ID: B-6 (15.5-15.75)

Date Collected: 02/03/17 13:20

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-7

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			10673	02/09/17 11:25	NMI	TAL SPK

Client Sample ID: B-6 (15.5-15.75)

Date Collected: 02/03/17 13:20

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-7

Matrix: Solid

Percent Solids: 87.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.077 g	5 mL	10708	02/13/17 08:29	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	10713	02/13/17 17:08	MRS	TAL SPK
Total/NA	Prep	3550C			15.66 g	5 mL	10672	02/09/17 11:23	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10676	02/09/17 15:51	NMI	TAL SPK

Client Sample ID: B-7 Cuttings

Date Collected: 02/03/17 10:45

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-8

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			10673	02/09/17 11:25	NMI	TAL SPK

Client Sample ID: B-7 Cuttings

Date Collected: 02/03/17 10:45

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-8

Matrix: Solid

Percent Solids: 73.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			3.947 g	5 mL	10708	02/13/17 08:29	MRS	TAL SPK
Total/NA	Analysis	8260C		10	0.86 mL	43 mL	10713	02/13/17 17:30	MRS	TAL SPK
Total/NA	Prep	3550C			15.96 g	5 mL	10672	02/09/17 11:23	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		10			10676	02/09/17 16:08	NMI	TAL SPK

Client Sample ID: B-8 (16.25-16.5)

Date Collected: 02/03/17 08:30

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-9

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			10673	02/09/17 11:25	NMI	TAL SPK

Client Sample ID: B-8 (16.25-16.5)

Date Collected: 02/03/17 08:30

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-9

Matrix: Solid

Percent Solids: 89.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.289 g	5 mL	10708	02/13/17 08:29	MRS	TAL SPK

TestAmerica Spokane

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Client Sample ID: B-8 (16.25-16.5)

Date Collected: 02/03/17 08:30

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-9

Matrix: Solid

Percent Solids: 89.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	10739	02/14/17 14:29	MRS	TAL SPK
Total/NA	Prep	3550C			15.90 g	5 mL	10672	02/09/17 11:23	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10676	02/09/17 16:26	NMI	TAL SPK

Client Sample ID: B-8:020317

Date Collected: 02/03/17 09:40

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		2	43 mL	43 mL	10651	02/08/17 18:22	MRS	TAL SPK
Total/NA	Prep	3510C			204.5 mL	2 mL	10710	02/13/17 10:38	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10715	02/13/17 13:51	NMI	TAL SPK

Client Sample ID: B-9 (10.75-11)

Date Collected: 02/04/17 12:10

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-11

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			10673	02/09/17 11:25	NMI	TAL SPK

Client Sample ID: B-9 (10.75-11)

Date Collected: 02/04/17 12:10

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-11

Matrix: Solid

Percent Solids: 89.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.101 g	5 mL	10708	02/13/17 08:29	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	10739	02/14/17 14:50	MRS	TAL SPK
Total/NA	Prep	3550C			15.20 g	5 mL	10672	02/09/17 11:23	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10676	02/09/17 17:00	NMI	TAL SPK

Client Sample ID: B-9:020417

Date Collected: 02/04/17 13:10

Date Received: 02/07/17 11:20

Lab Sample ID: 590-5485-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	10651	02/08/17 18:42	MRS	TAL SPK
Total/NA	Prep	3510C			220.4 mL	2 mL	10710	02/13/17 10:38	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10715	02/13/17 14:08	NMI	TAL SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Client Sample ID: Trip Blank

Lab Sample ID: 590-5485-13

Date Collected: 02/01/17 00:00

Matrix: Water

Date Received: 02/07/17 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	10651	02/08/17 19:03	MRS	TAL SPK

Laboratory References:

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



Certification Summary

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Laboratory: TestAmerica Spokane

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Washington	State Program	10	C569	01-06-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

1

2

3

4

5

6

7

8

9

10

11

12

Method Summary

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5485-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SPK
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	TAL SPK
Moisture	Percent Moisture	EPA	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 = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200



CHAIN OF CUSTODY RECORD

GeoEngineers
523 EAST SECOND AVE.
SPOKANE, WASHINGTON 99202
(509) 363-3125

DATE 2/17/17
 PAGE 1 OF 2
 LAB _____
 LAB NO. _____

PROJECT NAME/LOCATION <u>Dawson</u>						ANALYSIS REQUIRED										NOTES/COMMENTS <small>(Preserved, filtered, etc.)</small>							
PROJECT NUMBER <u>0504-130-00</u>		PROJECT MANAGER <u>Scott Lathan</u>		SAMPLED BY <u>Callan Driscoll</u>																			
SAMPLE IDENTIFICATION		SAMPLE COLLECTION			# OF JARS	W N P H - D X	B T E X																
LAB	GEOENGINEERS	DATE	TIME	MATRIX																			
	B-2(25-25.25)	2/4/17	1015	S	3	X	X																
	B-2:02047	2/4/17	1110	W		X	X																
	B-3(10.75-11)	2/2/17	1445	S		X	X																
	B-4(11-11.25)	2/1/17	1345	S		X	X																
	B-4:02017	2/1/17	1625	W		X	X																
	B-5(5.5-5.75)	2/2/17	1010	S		X	X																
	B-6(15.5-15.75)	2/3/17	1320	S		X	X																
	B-7 cuttings	2/3/17	1045	S		X	X																
	B-8(16.25-16.5)	2/3/17	0830	S		X	X																
	B-8:020317	2/3/17	0940	W		X	X																
	B-9(10.75-11)	2/4/17	1210	S	X	X																	



RELINQUISHED BY SIGNATURE <u>Callan Driscoll</u> PRINTED NAME <u>Callan</u> DATE <u>2/17/17</u> TIME <u>11:20</u>	RELINQUISHED BY SIGNATURE _____ PRINTED NAME _____ DATE _____ TIME _____	RELINQUISHED BY SIGNATURE _____ PRINTED NAME _____ DATE _____ TIME _____
RECEIVED BY SIGNATURE <u>Sheila Kratz</u> PRINTED NAME <u>Sheila Kratz</u> DATE <u>2/17/17</u> TIME <u>11:20</u>	RECEIVED BY SIGNATURE _____ PRINTED NAME _____ DATE _____ TIME _____	RECEIVED BY SIGNATURE _____ PRINTED NAME _____ DATE _____ TIME _____

ADDITIONAL COMMENTS: 0.2% IR003

CHAIN OF CUSTODY RECORD

GeoEngineers
523 EAST SECOND AVE.
SPOKANE, WASHINGTON 99202
(509) 363-3125

DATE 2/7/17
 PAGE 2 OF 2
 LAB _____
 LAB NO. _____

PROJECT NAME/LOCATION <u>Dawson</u>						ANALYSIS REQUIRED						NOTES/COMMENTS	
PROJECT NUMBER <u>0504-130-00</u>						NWTPH-DX BTX						(Preserved, filtered, etc.)	
PROJECT MANAGER <u>Scott Latten</u>													
SAMPLED BY <u>Callan Driscoll</u>													

SAMPLE IDENTIFICATION		SAMPLE COLLECTION			# OF JARS												
LAB	GEOENGINEERS	DATE	TIME	MATRIX	#	JARS											
	<u>B-9:020417</u>	<u>2/4/17</u>	<u>1310</u>		<u>W</u>	<u>3</u>	<u>X</u>	<u>X</u>									
	<u>Trip Blank</u>		<u>—</u>		<u>W</u>	<u>1</u>	<u>X</u>	<u>X</u>									

RELINQUISHED BY <u>[Signature]</u> FIRM SIGNATURE _____ PRINTED NAME <u>Callan Driscoll</u> DATE <u>2/7/17</u> TIME <u>1120</u>	RELINQUISHED BY _____ FIRM SIGNATURE _____ PRINTED NAME _____ DATE _____ TIME _____	RELINQUISHED BY _____ FIRM SIGNATURE _____ PRINTED NAME _____ DATE _____ TIME _____
RECEIVED BY <u>[Signature]</u> FIRM <u>TRAPOL</u> SIGNATURE _____ PRINTED NAME <u>Shelie Ratzel</u> DATE <u>2/7/17</u> TIME <u>1120</u>	RECEIVED BY _____ FIRM SIGNATURE _____ PRINTED NAME _____ DATE _____ TIME _____	RECEIVED BY _____ FIRM SIGNATURE _____ PRINTED NAME _____ DATE _____ TIME _____

ADDITIONAL COMMENTS: 2.2C TR003

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-5485-1

Login Number: 5485

List Source: TestAmerica Spokane

List Number: 1

Creator: Kratz, Sheila J

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.	True	
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.	True	
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	



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Spokane

11922 East 1st Ave

Spokane, WA 99206

Tel: (509)924-9200

TestAmerica Job ID: 590-5502-1

Client Project/Site: Dawson/0504-130-00

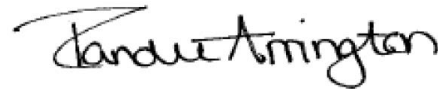
For:

GeoEngineers Inc

523 East Second Ave

Spokane, Washington 99202

Attn: Scott Lathen



Authorized for release by:

2/15/2017 11:56:25 AM

Randee Arrington, Project Manager II

(509)924-9200

randee.arrington@testamericainc.com

LINKS

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

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

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9

10

11

12



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Sample Summary	4
Definitions	5
Client Sample Results	6
QC Sample Results	9
Chronicle	11
Certification Summary	12
Method Summary	13
Chain of Custody	14
Receipt Checklists	15

Case Narrative

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5502-1

Job ID: 590-5502-1

Laboratory: TestAmerica Spokane

Narrative

Receipt

The samples were received on 2/9/2017 11:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2° C.

GC/MS VOA

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

GC Semi VOA

Method NWTPH-Dx: Detected hydrocarbons in the diesel range appear to be due to a heavy gas/light diesel component as well as diesel in the following samples: MW-1:020817 (590-5502-1) and Dup:020817 (590-5502-4).

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

Organic Prep

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

VOA Prep

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

Sample Summary

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5502-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-5502-1	MW-1:020817	Water	02/08/17 16:28	02/09/17 11:40
590-5502-2	MW-2:020817	Water	02/08/17 14:16	02/09/17 11:40
590-5502-3	MW-3:020817	Water	02/08/17 15:25	02/09/17 11:40
590-5502-4	Dup:020817	Water	02/08/17 12:00	02/09/17 11:40

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Definitions/Glossary

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5502-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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 Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5502-1

Client Sample ID: MW-1:020817

Lab Sample ID: 590-5502-1

Date Collected: 02/08/17 16:28

Matrix: Water

Date Received: 02/09/17 11:40

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	6.3		0.20		ug/L			02/09/17 18:58	1
Ethylbenzene	38		1.0		ug/L			02/09/17 18:58	1
m,p-Xylene	30		2.0		ug/L			02/09/17 18:58	1
o-Xylene	29		1.0		ug/L			02/09/17 18:58	1
Toluene	1.4		1.0		ug/L			02/09/17 18:58	1
Xylenes, Total	59		3.0		ug/L			02/09/17 18:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		70 - 125		02/09/17 18:58	1
4-Bromofluorobenzene (Surr)	102		69 - 120		02/09/17 18:58	1
Dibromofluoromethane (Surr)	104		80 - 120		02/09/17 18:58	1
Toluene-d8 (Surr)	99		80 - 120		02/09/17 18:58	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)	2.6		0.12		mg/L		02/14/17 10:04	02/14/17 13:44	1
Residual Range Organics (RRO) (C25-C36)	ND		0.21		mg/L		02/14/17 10:04	02/14/17 13:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	110		50 - 150	02/14/17 10:04	02/14/17 13:44	1
n-Triacontane-d62	92		50 - 150	02/14/17 10:04	02/14/17 13:44	1

Client Sample ID: MW-2:020817

Lab Sample ID: 590-5502-2

Date Collected: 02/08/17 14:16

Matrix: Water

Date Received: 02/09/17 11:40

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.20		ug/L			02/09/17 19:19	1
Ethylbenzene	ND		1.0		ug/L			02/09/17 19:19	1
m,p-Xylene	ND		2.0		ug/L			02/09/17 19:19	1
o-Xylene	ND		1.0		ug/L			02/09/17 19:19	1
Toluene	ND		1.0		ug/L			02/09/17 19:19	1
Xylenes, Total	ND		3.0		ug/L			02/09/17 19:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		70 - 125		02/09/17 19:19	1
4-Bromofluorobenzene (Surr)	99		69 - 120		02/09/17 19:19	1
Dibromofluoromethane (Surr)	107		80 - 120		02/09/17 19:19	1
Toluene-d8 (Surr)	98		80 - 120		02/09/17 19:19	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)	ND		0.12		mg/L		02/14/17 10:04	02/14/17 14:01	1
Residual Range Organics (RRO) (C25-C36)	ND		0.20		mg/L		02/14/17 10:04	02/14/17 14:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	87		50 - 150	02/14/17 10:04	02/14/17 14:01	1

TestAmerica Spokane

Client Sample Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5502-1

Client Sample ID: MW-2:020817

Lab Sample ID: 590-5502-2

Date Collected: 02/08/17 14:16

Matrix: Water

Date Received: 02/09/17 11:40

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Triacontane-d62	89		50 - 150	02/14/17 10:04	02/14/17 14:01	1

Client Sample ID: MW-3:020817

Lab Sample ID: 590-5502-3

Date Collected: 02/08/17 15:25

Matrix: Water

Date Received: 02/09/17 11:40

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.20		ug/L			02/09/17 19:40	1
Ethylbenzene	ND		1.0		ug/L			02/09/17 19:40	1
m,p-Xylene	ND		2.0		ug/L			02/09/17 19:40	1
o-Xylene	ND		1.0		ug/L			02/09/17 19:40	1
Toluene	ND		1.0		ug/L			02/09/17 19:40	1
Xylenes, Total	ND		3.0		ug/L			02/09/17 19:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		70 - 125		02/09/17 19:40	1
4-Bromofluorobenzene (Surr)	100		69 - 120		02/09/17 19:40	1
Dibromofluoromethane (Surr)	107		80 - 120		02/09/17 19:40	1
Toluene-d8 (Surr)	100		80 - 120		02/09/17 19:40	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		0.12		mg/L		02/14/17 10:04	02/14/17 14:18	1
Residual Range Organics (RRO) (C25-C36)	ND		0.21		mg/L		02/14/17 10:04	02/14/17 14:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	85		50 - 150	02/14/17 10:04	02/14/17 14:18	1
n-Triacontane-d62	86		50 - 150	02/14/17 10:04	02/14/17 14:18	1

Client Sample ID: Dup:020817

Lab Sample ID: 590-5502-4

Date Collected: 02/08/17 12:00

Matrix: Water

Date Received: 02/09/17 11:40

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	6.4		0.20		ug/L			02/09/17 20:00	1
Ethylbenzene	38		1.0		ug/L			02/09/17 20:00	1
m,p-Xylene	30		2.0		ug/L			02/09/17 20:00	1
o-Xylene	29		1.0		ug/L			02/09/17 20:00	1
Toluene	1.3		1.0		ug/L			02/09/17 20:00	1
Xylenes, Total	59		3.0		ug/L			02/09/17 20:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		70 - 125		02/09/17 20:00	1
4-Bromofluorobenzene (Surr)	103		69 - 120		02/09/17 20:00	1
Dibromofluoromethane (Surr)	104		80 - 120		02/09/17 20:00	1
Toluene-d8 (Surr)	98		80 - 120		02/09/17 20:00	1

TestAmerica Spokane

Client Sample Results

Client: GeoEngineers Inc
 Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5502-1

Client Sample ID: Dup:020817

Lab Sample ID: 590-5502-4

Date Collected: 02/08/17 12:00

Matrix: Water

Date Received: 02/09/17 11:40

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)	2.5		0.13		mg/L		02/14/17 10:04	02/14/17 14:36	1
Residual Range Organics (RRO) (C25-C36)	ND		0.21		mg/L		02/14/17 10:04	02/14/17 14:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	103		50 - 150				02/14/17 10:04	02/14/17 14:36	1
<i>n</i> -Triacontane-d62	87		50 - 150				02/14/17 10:04	02/14/17 14:36	1



QC Sample Results

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5502-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 590-10688/5

Matrix: Water

Analysis Batch: 10688

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.20		ug/L			02/09/17 17:55	1
Ethylbenzene	ND		1.0		ug/L			02/09/17 17:55	1
m,p-Xylene	ND		2.0		ug/L			02/09/17 17:55	1
o-Xylene	ND		1.0		ug/L			02/09/17 17:55	1
Toluene	ND		1.0		ug/L			02/09/17 17:55	1
Xylenes, Total	ND		3.0		ug/L			02/09/17 17:55	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		70 - 125		02/09/17 17:55	1
4-Bromofluorobenzene (Surr)	100		69 - 120		02/09/17 17:55	1
Dibromofluoromethane (Surr)	107		80 - 120		02/09/17 17:55	1
Toluene-d8 (Surr)	99		80 - 120		02/09/17 17:55	1

Lab Sample ID: LCS 590-10688/1003

Matrix: Water

Analysis Batch: 10688

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	10.0	11.6		ug/L		116	80 - 120
Ethylbenzene	10.0	10.8		ug/L		108	80 - 120
m,p-Xylene	10.0	10.9		ug/L		109	80 - 120
o-Xylene	10.0	11.2		ug/L		112	80 - 120
Toluene	10.0	11.0		ug/L		110	80 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	103		70 - 125
4-Bromofluorobenzene (Surr)	97		69 - 120
Dibromofluoromethane (Surr)	105		80 - 120
Toluene-d8 (Surr)	99		80 - 120

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

Lab Sample ID: MB 590-10733/1-A

Matrix: Water

Analysis Batch: 10734

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 10733

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.12		mg/L		02/14/17 10:04	02/14/17 10:48	1
Residual Range Organics (RRO) (C25-C36)	ND		0.20		mg/L		02/14/17 10:04	02/14/17 10:48	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	94		50 - 150	02/14/17 10:04	02/14/17 10:48	1
n-Triacontane-d62	94		50 - 150	02/14/17 10:04	02/14/17 10:48	1

TestAmerica Spokane

QC Sample Results

Client: GeoEngineers Inc
 Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5502-1

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

Lab Sample ID: LCS 590-10733/2-A

Matrix: Water

Analysis Batch: 10734

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 10733

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	1.61	1.51		mg/L		94	50 - 150
Residual Range Organics (RRO) (C25-C36)	1.60	1.61		mg/L		101	50 - 150

Surrogate	LCS		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	98		50 - 150
<i>n</i> -Triacontane-d62	98		50 - 150

Lab Sample ID: LCSD 590-10733/3-A

Matrix: Water

Analysis Batch: 10734

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 10733

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics (DRO) (C10-C25)	1.61	1.36		mg/L		85	50 - 150	10	25
Residual Range Organics (RRO) (C25-C36)	1.60	1.50		mg/L		94	50 - 150	7	25

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	93		50 - 150
<i>n</i> -Triacontane-d62	95		50 - 150

Lab Chronicle

Client: GeoEngineers Inc
 Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5502-1

Client Sample ID: MW-1:020817

Lab Sample ID: 590-5502-1

Date Collected: 02/08/17 16:28

Matrix: Water

Date Received: 02/09/17 11:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	10688	02/09/17 18:58	MRS	TAL SPK
Total/NA	Prep	3510C			240.1 mL	2 mL	10733	02/14/17 10:04	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10734	02/14/17 13:44	NMI	TAL SPK

Client Sample ID: MW-2:020817

Lab Sample ID: 590-5502-2

Date Collected: 02/08/17 14:16

Matrix: Water

Date Received: 02/09/17 11:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	10688	02/09/17 19:19	MRS	TAL SPK
Total/NA	Prep	3510C			245.2 mL	2 mL	10733	02/14/17 10:04	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10734	02/14/17 14:01	NMI	TAL SPK

Client Sample ID: MW-3:020817

Lab Sample ID: 590-5502-3

Date Collected: 02/08/17 15:25

Matrix: Water

Date Received: 02/09/17 11:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	10688	02/09/17 19:40	MRS	TAL SPK
Total/NA	Prep	3510C			243.6 mL	2 mL	10733	02/14/17 10:04	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10734	02/14/17 14:18	NMI	TAL SPK

Client Sample ID: Dup:020817

Lab Sample ID: 590-5502-4

Date Collected: 02/08/17 12:00

Matrix: Water

Date Received: 02/09/17 11:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	43 mL	43 mL	10688	02/09/17 20:00	MRS	TAL SPK
Total/NA	Prep	3510C			238.5 mL	2 mL	10733	02/14/17 10:04	NMI	TAL SPK
Total/NA	Analysis	NWTPH-Dx		1			10734	02/14/17 14:36	NMI	TAL SPK

Laboratory References:

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

Certification Summary

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5502-1

Laboratory: TestAmerica Spokane

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Washington	State Program	10	C569	01-06-18

Analysis Method	Prep Method	Matrix	Analyte
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- 2
- 3
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Method Summary

Client: GeoEngineers Inc
Project/Site: Dawson/0504-130-00

TestAmerica Job ID: 590-5502-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SPK
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	TAL SPK

Protocol References:

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

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TestAmerica Spokane

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

Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

Client Information		Sampler: <i>M. Peterson</i>		Lab PM:		Carrier Tracking No(s):		COC No: 590-2272-790.1			
Client Contact: Callan Driscoll		Phone: 425-293-9560		E-Mail:				Page: Page 1 of 1			
Company: GeoEngineers Inc				Analysis Requested						Job #	
Address: 523 East Second Ave		Due Date Requested:		Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> BT= Tissue, A= Air <input checked="" type="checkbox"/> BTEX <input checked="" type="checkbox"/> NMTPH_Dx <input type="checkbox"/>						Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)	
City: Spokane		TAT Requested (days):									
State, Zip: WA, 99202		PO #:									
Phone:		WO #:									
Email: cdriscoll@geoengineers.com		Project #:									
Project Name: Dawson 0504-130 - 00		SSOW#:									
Site:											
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)	BT= Tissue, A= Air	NMTPH_Dx	Total Number of containers Special Instructions/Note:	
						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
MW-1: 020817		2-8-17	1628	G	Solid	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
MW-2: 020817		↓	1416	↓	Solid	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
MW-3: 020817		↓	1525	↓	Solid	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Dup: 020817		↓	1200	↓	Solid	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
					Solid						
					W						
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <i>M. Peterson</i>		Date/Time: 2-9-17 1140		Company: GEL		Received by: <i>Shweta Prasad</i>		Date/Time: 2/9/17 1140		Company: JAC/POK	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Custody Seals Intact Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 3.2°C IPOQB							



Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-5502-1

Login Number: 5502

List Source: TestAmerica Spokane

List Number: 1

Creator: Kratz, Sheila J

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.	True	
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.	True	
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	



APPENDIX C
Report Limitations and Guidelines for Use

APPENDIX C REPORT LIMITATIONS AND GUIDELINES FOR USE¹

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

Environmental Services Are Performed for Specific Purposes, Persons and Projects

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

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

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

This report has been prepared for Dawson Trucking site located at 3366 Waitts Lake Road in Valley, 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

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

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.

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 Assessment is Completed

No environmental site assessment 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.

Have we delivered World Class Client Service?

Please let us know by visiting www.geoengineers.com/feedback.

