Site Characterization Report

Ken's Auto Wash

1013 East University Way
Ellensburg, Washington

Prepared for

Secret Assets University Way Property LLC

September 24, 2019
7168-10

HARTCROWSER

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Site Characterization Report

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1.0 INTRODUCTION

The primary objectives of the site characterization were to install additional soil borings and temporary soil vapor probes to address the Washington State Department of Ecology's (Ecology's) comments in pursuit of a No Further Action (NFA) determination. The goal of this investigation was to assess whether residual soil petroleum contamination present at the Site is below Model Toxics Control Act (MTCA) Method B direct contact cleanup levels and to determine if the vapor intrusion pathway is of potential concern for occupants of future or current buildings located on the Ken's Auto Wash property.

This report presents a summary of the sampling procedures and laboratory testing results for the Ken's Auto Wash Site (Site) in Ellensburg, Washington (Figure 1). The site characterization was conducted in general accordance with the Sampling and Analysis Work Plan, dated December 17, 2018.

2.0 SITE BACKGROUND

2.1 Site Description and History

The Site, which is defined as the area impacted by petroleum release(s) originating from the Ken's Auto Wash property, is affected by a petroleum hydrocarbon release discovered during tightness testing for a gasoline underground storage tank (UST) in 1996. Corrective actions were taken at that time, and the gasoline UST was subsequently removed with all other site USTs in April 2005 (June 7, 2005, Gasoline UST Closure Report by Hart Crowser). Prior to UST removal, Hart Crowser removed a hotspot of accessible petroleum-impacted soil in October and November 2000. During the hotspot removal, oxygen-release compound (ORC) was added to the excavation backfill below the seasonal high-water table elevation to promote biodegradation of remaining petroleum hydrocarbons. ORC was also injected in the area of affected groundwater immediately downgradient of the UST area in February 2005 (April 6, 2005, Supplemental Strataprobe Exploration Report by Hart Crowser).

Additional project and regulatory background information is presented in Hart Crowser's November 14, 2006, Remedial Investigation and Feasibility Study Report (RI/FS). The RI/FS identified monitored natural attenuation with free product removal as the preferred remedial action. No free product has been identified at the Site since 2004.

In 2011, Hart Crowser implemented a bioremediation program to accelerate natural biological attenuation of petroleum at the Site. The enhanced bioremediation program introduced remediation amendments (hydrocarbon-degrading microbes, surfactants, and nutrients) into existing monitoring wells (MW) to accelerate natural attenuation already occurring at the Site over a series of three injection events, which

occurred on January 31, May 3, and November 30, 2011. Based on groundwater monitoring data collected through February 2012, substantial petroleum destruction occurred within the treatment zone (May 16, 2012, Bioremediation Data Report by Hart Crowser). However, the data also showed that the biological oxidants had been consumed and groundwater sampled from monitoring well (MW-14) continued to exhibit petroleum concentrations above Washington State's Model Toxics Control Act (MTCA) Method A cleanup levels.

In February 2015, a bioremediation lance injection program was initiated. Unlike the remedial program conducted in 2011, this approach was designed to directly deliver amendments to areas of residual contamination, rather than injecting amendments into monitoring wells and relying on passive transport via groundwater. Our subcontractor, Bioremediation Specialists, LLC, (BIOS) of Beaverton, Oregon, used lance injection technology to apply a mixture of chemical and biological oxidants, a surfactant, and microbial amendment. Eight lance injections were completed in an east-west alignment approximately 2-feet south of MW-4. Two weeks later, 14 additional lance injections were completed. The 2-week interval between injections allowed time for the chemical oxidants to establish an environment conducive to microbial growth.

Groundwater monitoring has been conducted at the Site through December 2016, in compliance with an Agreed Order (dated December 23, 2013) with Ecology under MTCA (RCW 70.105D.040[5]).

Cleanup activities conducted at the Ken's Auto Site have effectively reduced the concentrations and mobility of petroleum hydrocarbon contaminants. There are no locations that exceed MTCA groundwater cleanup levels for petroleum constituents of concern over the last four quarterly monitoring events. Total petroleum hydrocarbons as gasoline (TPH-G) remain in the soil that was left in place near the utility line along University Way during the hotspot excavation in 2000. However, the 2015 lance injections appear to have enhanced biological degradation in this area and reduced the leachable petroleum hydrocarbon concentrations in well MW-14.

TPH-G and benzene groundwater concentrations in the vicinity and downgradient of the former UST and hotspot soil excavations have been below MTCA cleanup levels for at least four quarters of monitoring. Benzene and TPH-G concentrations in the Site wells that were inaccessible during 2016 have been non-detect at the specified reporting limit since 2011.

Based on these results, Ecology has determined that the historic petroleum releases at the Site are no longer significantly impacting the groundwater pathway. However, current soil quality data is needed to evaluate if residual petroleum contamination still exceeds Method B direct contact cleanup levels. Additional data is also needed to evaluate if the vapor intrusion pathway is of potential concern to future or current buildings located on the Site.

2.2 Geology and Hydrogeology

Ken's Auto Wash (the site) is located at 1013 East University Way in Ellensburg, Washington (Figure 2), at the northwest corner of East University Way and Alder Street. The property, a former gas and service station, covers approximately 15,000 square feet (0.35 acre). The site is currently occupied by Ken's Auto

Wash (a three-stall car wash) and Winegar's, (a retail ice cream and coffee shop). The site is paved with concrete beneath the car wash on the southern half of the site and with asphalt to the north and east of the car wash and retail shop. Properties to the west and south are unpaved and are commonly used for parking.

2.2.1 Geology

Shallow soil typically encountered at the Site are near-surface fill of variable thickness and alluvial deposits consisting of silty, sandy gravel with occasional cobbles. This soil is consistent with shallow soil recorded on well logs and observed in the upper 32 feet of the municipal supply well southeast of the site. Silty sand and sandy silt with gravel was commonly found from depths of approximately one to fifteen feet below ground surface (bgs) in all the borings in the current investigation.

2.2.2 Hydrogeology

A clay aquitard underlies the shallow soil, and municipal supply well logs indicate that several aquitards separate shallow site groundwater from deeper water-bearing units, including units used for water supply. Shallow site groundwater appears to be perched above the aquitard and is typically present between 4.3 and 9.8 feet bgs. Groundwater elevations at the site typically fluctuate between 1 to 2 feet seasonally, reaching their peak elevations in late spring and low point in late fall. The groundwater flow direction is toward the southwest. Calculated gradients are typically between 0.015 and 0.025 and do not change significantly with season. Extensive areas of imported gravel fill to depths of 13 feet bgs likely influence groundwater flow across the site.

3.0 SITE CHARACTERIZATION

3.1 Field Investigation Activities and Observations

On March 7, 2019, we advanced 11 push-probe borings using a truck mounted direct-push drill rig (P-1 to P-11) to depths of 15 feet. Five of these borings (P-1 to P-4 and P-7) were completed as temporary soil vapor probes by installing a tubing system in each probe location (Figure 2). We collected soil samples at 2.5-foot intervals from all 11 borings. We also collected soil vapor samples at a depth of 4 feet bgs from the five, temporary soil-vapor probes. Due to laboratory preservation issues, soil samples collected for volatile organic analysis were deemed not acceptable and required resampling. Borings were installed at the same 11 locations on April 24, 2019 and soil samples were submitted for chemical analysis.

Soil samples were field-screened using sheen tests, visual and olfactory observations, and/or a photoionization detector (PID) to detect volatile organic compounds (VOCs) in the headspace. Soil samples from borings P-3, P-4, P-5, P-8, P-9, P-10 and P-11 had TPH odors and elevated headspace readings noted. None of the soil samples from any borings had sheens noted. Non-aqueous phase liquid (NAPL) was not observed in any of the borings. Field screening results are shown on the exploration logs in Appendix A.

3.2 Soil Boring and Vapor Probe Construction and Sampling

Eleven soil borings were advanced to a depth of 15 feet bgs using a truck-mounted direct-push drill rig. Five of the borings were completed as soil vapor probes. All wells were installed and constructed in

accordance with WAC and RCW rules and regulations. A temporary probe casing and vapor collection screen (soil vapor implant) were advanced into the bore hole to approximately 4 feet and sealed with bentonite clay. The soil vapor implant consists of a 6-inch stainless steel screen and ¼-inch Teflon tubing. The sampling assembly was shrouded with helium gas as a helium detector was used to draw representative soil vapor from the sample point and confirm that the sampling assembly is airtight. The tubing was purged using a peristaltic pump to remove ambient air, and approximately one liter of soil vapor was withdrawn through the tubing into a summa cannister, using a flow controller set at a rate below 200 mL/min. After the sample was collected, the temporary casing was removed, and drilling continued to a depth of 15 feet bgs.

3.3 Soil Sample Chemical Analysis and Results

Thirty soil samples were selected based on field screening results, sample location, and depth and submitted for chemical analysis of: TPH-G; methyl t-butyl ether (MTBE); benzene, toluene, ethylbenzene, and xylene (BTEX); and volatile petroleum hydrocarbons (VPH). The soil sample analytical results are summarized in Table 1, and data validation and laboratory reports are provided in Appendix B.

We compared the results with MTCA Method A soil cleanup levels for unrestricted land use; however, site-specific Method B cleanup level for TPH-G was calculated using the VPH data, which is discussed in Section 4.0 (MTCA Compliance Evaluation). Analytical results are summarized below.

- TPH-G was detected in 14 of the 30 soil samples analyzed at concentrations of up to 1,300 milligrams per kilogram (mg/kg), with 9 samples at concentrations above the MTCA Method A cleanup level of 100 mg/kg (when benzene is not present). The highest TPH-G concentrations in soil were detected at the 8- to 10-feet depth interval in borings P-5, P-10, and P-11 which are located south of the former USTs/pump island areas along University Way (Figure 2). As discussed in Section 2.1 (Site Description and History), the former groundwater petroleum hot spot in well MW-14 was also located in this portion of the Site.

- MTBE, benzene, and toluene were not detected at or above laboratory reporting limits. Ethylbenzene was detected in three samples and toluene was detected in one sample at concentrations below the respective MTCA Method A unrestricted soil cleanup levels.

3.4 Soil Vapor Sample Chemical Analysis and Results

Five soil vapor samples collected from the soil vapor borings were submitted for chemical analysis including petroleum hydrocarbon fractions using EPA Method TO-15 as well as for the helium tracer. Soil vapor sample analytical results are summarized in Table 2, and data validation and laboratory reports are provided in Appendix B.

Petroleum hydrocarbons were detected in all five subsurface vapor samples at concentrations ranging from 384 to 11,635 micrograms per cubic meter (µg/m^3). Only one soil vapor sample (P-7) had a petroleum concentration exceeding the generic Method B sub-slab soil gas screening level of 4,700 µg/m^3 provided in Ecology's Implementation Memorandum No. 18. Soil vapor sample P-7 was collected adjacent to University Way and is located over 50 feet away from existing buildings. As discussed in the following

section, the petroleum concentration observed in vapor sample P-7 does not exceed the site-specific Method B sub-slab screening level calculated from the fractionated TPH concentrations.

4.0 MTCA COMPLIANCE EVALUATION

The concentrations of TPH-G in nine soil samples collected from the Site exceeded the MTCA Method A unrestricted cleanup level of 100 mg/kg. As noted in the Ecology's Guidance for Remediation of Petroleum Contaminated Sites (Petroleum Guidance, Ecology 2016), Method A cleanup levels are intended for simple sites, such as most petroleum-contaminated facilities. However, generic Method A cleanup levels are designed to be conservative and incorporate multiple exposure pathways that may not exist at all sites. At the Ken's Auto Wash Site, long-term groundwater monitoring has already empirically demonstrated that the soil to groundwater (leaching and residual saturation) pathway is no longer of concern. Evaluation of the soil direct contact and vapor intrusion pathways is discussed in the following sections.

4.1 Method B Direct Contact Soil Cleanup Level

Ecology's Petroleum Guidance (Ecology, 2016) provides instructions for calculating Method B soil petroleum cleanup levels and are described below.

4.1.1 Volatile Petroleum Hydrocarbons (VPH) Testing

As part of characterizing the site for when Method B cleanup levels will be used, it is necessary to establish the fractionated composition of the petroleum-impacted soil. This requires submitting select samples for VPH and/or EPH depending on the composition of the petroleum. For TPH-G, only the VPH method is necessary to establish the fractionated petroleum composition. The number of soil samples needed to establish the fractionated petroleum composition will depend on if multiple mixtures are present at the site, differences in weathering (e.g. soil in contact with groundwater versus unsaturated soil beneath a cap), and total volume of impacted soil. Ecology provides guidance on the recommended number of VPH samples per volume of impacted soil. At Ken's Auto Wash, 31 soil samples were collected, and 30 soil samples were analyzed for VPH. Based on our review of petroleum composition data, it appears that the composition of petroleum present in Site subsurface soil is relatively similar (consistent with weathered gasoline).

4.1.2 Calculating Method B Direct Contact Cleanup Level

Site-specific petroleum cleanup levels may be developed using Method B for unrestricted (residential or commercial) land use for the direct contact pathway. To calculate a site-specific TPH-G cleanup level, VPH concentrations were entered into Ecology's MTCA TPH 11.1 Excel workbook tool (downloaded at https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools).

Three soil samples (PP-5 8-10, PP-8 11-13, PP-11 8-10) VPH data were used to calculate MTCA Method B TPH-G cleanup levels. The soil samples were selected based on elevated TPH-G concentrations and obtaining good spatial coverage. Sample PP-5 8-10 has the highest TPH-G concentration of 1,300 mg/kg and is located near the former UST area. Sample PP-8 11-13 has a TPH-G concentration of 440 mg/kg and

is located adjacent to the sidewalk towards the west. Sample PP-11 8-10 has the second highest TPH-G concentration of 980 mg/kg and is located adjacent to the sidewalk towards the east.

Copies of the MTCA TPH 11.1 worksheets are provided Appendix C, which shows fractionated hydrocarbon input data as well as the calculated Method B direct contact cleanup level. Most of the petroleum present in the soil samples collected from the borings were aliphatic hydrocarbons in the E5 to 12 range. The calculated direct cleanup levels range from 3,054 to 3,885 mg/kg. Based on the average for the calculated results, the Method B unrestricted direct contact petroleum cleanup level for petroleum at Ken's Auto Wash soil is 3,413 mg/kg. Therefore, all nine samples that exceed the MTCA Method A soil cleanup level are below the site-specific MTCA Method B unrestricted direct cleanup level.

4.2 Method B Site-Specific Soil Gas Screening Level

As discussed in Section 3.4, one soil vapor sample (P-7) had a TPH concentration of 11,635 µg/m^3 that exceeds the generic MTCA Method B sub-slab soil gas screening level of 4,700 µ/m^3. Although no buildings are currently within the 30-foot lateral inclusion zone of the P-7 location (i.e. petroleum vapors from the P-7 location would not likely impact indoor air), vapor intrusion issues could potentially occur if buildings are constructed near P-7 in the future. In order to evaluate potential future risks associated with vapor intrusion in this area, calculation of a site-specific soil gas screening level was performed.

As noted in Attachment A of Ecology's Implementation Memorandum No. 18, the generic Method B sub-slab petroleum screening level of 4,700 µ/m^3 is based on applying an attenuation factor of 0.03 to the generic Method B petroleum indoor air cleanup level of 140 µ/m^3. While the generic Method B sub-slab soil gas screening level can be used at any site, calculating a site-specific screening level may be appropriate if the anticipated makeup of the petroleum vapors would primarily consist of lower weight aliphatic compounds in the Equivalent Carbon (EC) 5-8 range. Most of the petroleum hydrocarbons present in the P-7 soil vapor sample were the less toxic Aliphatics EC 5-8 fraction (Table 2). In addition, individual BTEX and naphthalene concentrations in sample P-7 did not exceed MTCA Method B sub-slab screening levels.

4.2.1 Calculating Method B Sub-Slab Soil Gas Screening Level

The fractionated TPH data for sample P-7 was used to calculate the Method B sub-slab soil gas screening level based on equations provided in Attachment B of the PVI Memorandum No. 18 and applying the appropriate attenuation factor (0.03 for sub-slab screening levels). A copy of the worksheet with the calculations is provided in Appendix C.

The calculated Method B sub-slab soil gas screening level is 16,798 µ/m^3. Therefore, sample P-7 total petroleum concentration of 11,635 µ/m^3 is below the site-specific calculated Method B sub-slab soil gas screening level. Based on these results, petroleum vapor intrusion into current or future buildings does not appear to pose an unacceptable health risk at the Site. However, we recommend that future construction in the P-7 area take precautions to limit preferred pathways for vapor migration into occupied spaces.

5.0 CONCEPTUAL SITE MODEL (CSM)

This section provides a conceptual understanding of the site that is based on the results of historical research and subsurface investigations performed at the Site. The chemicals and media of concern, the fate and transport characteristics of the release of hazardous substances, and the potential exposure pathways are discussed in this section.

A CSM presents the links between contaminant sources, release mechanisms, exposure pathways and routes, and receptors to summarize the current understanding of the risk to human health and the environment.

5.1 Contaminant Source and Release

The source of petroleum and VOC contamination at the Site was a leaking UST discovered during tightness testing in 1996. Gasoline USTs and associated piping delivery systems have been located on the southern half of the site. Former UST and pump island locations associated with Ken's Auto Wash operations. Corrective actions were taken at that time and the USTs were subsequently removed in April 2005. Petroleum-impacted soil was removed downgradient of the UST area in 2000, but a small volume of affected soil remained because of access restrictions due to utilities and the adjacent road. Hart Crowser and others have conducted several environmental field investigations, remedial actions, and groundwater monitoring at the Site.

5.1.1 Contaminants of Concern

Previous site investigations indicate the COCs at the Site are TPH-G and VOCs.

5.1.2 Media of Concern

Soil has been identified as the affected medium at the Site because results of the environmental investigations to date show elevated concentrations of COCs.

Groundwater was also identified as the affected medium at the Site because results of the previous environmental investigations showed elevated concentrations of COCs. However, in 2015 a bioremediation lance injection program was initiated, and TPH-G and benzene groundwater concentrations have been below MTCA cleanup levels for at least four quarters of monitoring. Based on these results, Ecology has determined that the historic petroleum releases at the site are no longer significantly impacting the groundwater pathway.

Based on the concentrations and depths of the COCs in soil, soil vapor may be a potential medium of concern; however, we evaluated the vapor intrusion pathway in Section 4.0 and based on site-specific Method B screening levels, soil vapor is not a medium of concern.

5.2 Fate and Transport

The primary physical, biological, and chemical processes that can influence contaminant concentrations and migration include:

- Adsorption to soil;
- Leaching or dissolution into groundwater;
- Biodegradation; and
- Volatilization.

In general, when petroleum, and VOCs are released into the subsurface, they will migrate downward through the unsaturated zone due to gravity. As they travel through the soil column, they will sorb onto soil particles. Petroleum and VOCs can leach or dissolve into groundwater and migrate with groundwater flow. Cleanup activities conducted at the Site have effectively reduced the concentrations and mobility of petroleum hydrocarbon contaminants. Over the last four quarterly monitoring events, there are no locations that exceed MTCA groundwater cleanup levels for petroleum contaminants.

Petroleum and VOCs can also degrade over time through chemical or biological processes. Volatile constituents evaporate and can migrate through the unsaturated zone as soil vapor. Some vapor may escape to the atmosphere or accumulate in enclosed spaces such as buildings. Biological degradation occurs predominantly in the aqueous, residual, and vapor phases. Compounds that are the most volatile are typically the most easily biodegraded.

5.3 Potential Exposure Pathways

For a contaminant to present a risk to human health and/or the environment, the pathway from the contaminant to the receptor must be complete. The potential exposure pathways for the medium of concern (soil) are summarized below.

- Direct ingestion;
- Dermal contact;
- Volatilization of contaminants from soil to air;
- Infiltration, percolation, or dissolution/desorption into groundwater;
- Plant uptake; and
- Fugitive dust.

Cleanup activities completed over the past two decades have addressed these potential exposure pathways.

- Direct contact with impacted soil is limited to humans who come into close contact with the media through dermal contact or direct ingestion (impacted soil is within 15 feet of ground surface). As discussed in Section 4.1, residual petroleum hydrocarbons in Site soil do not appear to pose an unacceptable direct contact (ingestion or dermal) risk. Petroleum concentrations in soil are below the site-specific Method B direct contact cleanup level.

- The soil-to-groundwater pathway was historically complete based on the previously observed groundwater petroleum contamination, but bioremediation activities and groundwater monitoring during 2016 indicate that the pathway is no longer a concern.

- Based on comparison to the site-specific, calculated MTCA Method B screening levels, the soil-to-air pathway is no longer a concern to current or future buildings.
- The Site is located in a highly urban area and is mostly covered with buildings, pavement, or gravel. Plants are not grown for human consumption and will not like be grown in the future, so the plant uptake pathway is not a concern.
- Since the Site is mostly paved with asphalt or concrete and surface and near-surface soil are generally not impacted by petroleum releases, emission of fugitive dust is limited.

5.4 Terrestrial Ecological Evaluation

The Ken's Auto Wash Site is in a highly urban area within the City of Ellensburg. Most residual soil contamination is present at depths exceeding 6 feet in depth and is generally covered by buildings, pavement, or gravel. It is highly unlikely that residual petroleum-containing subsurface soil at the Site would pose a threat to ecological receptors.

The Site qualifies for an exclusion under the Terrestrial Ecological Evaluation (TEE) process described in WAC 173-340-7491(c). Although a portion of the site located immediately west of Ken's Auto Wash property is an unpaved vacant lot, the area of contiguous undeveloped land is less than 1.5 acres and there are no known impacts associated with hazardous substances listed WAC 173-340-7491 1(c)(ii). Based on this exclusion, no additional evaluations are required to address potential impacts to ecological receptors.

5.5 Potential Receptors

Several classes of potential human and ecological receptors have been identified. Potential human receptors include current and future employees and other incidental users such as utility workers who may be exposed to contaminated soil or soil vapor. Potential ecological receptors include plants and animals exposed to impacted media and secondary food chain consumers such as birds and mammals. As demonstrated in previous sections, remedial actions have addressed or eliminated exposure pathways. Risks to potential human or ecological receptors associated with the residual petroleum hydrocarbons present at the Site are negligible.

6.0 CLEANUP STANDARDS

Cleanup standards include cleanup levels and points of compliance (POCs) as described in WAC 173-340-700 through WAC 173-340-760 and the Washington State Department of Ecology's Guidance for Remediation of Petroleum Contaminated Sites. Cleanup standards must also incorporate other state and federal regulatory requirements applicable to the cleanup action and/or its location as appropriate. The following sections summarize applicable cleanup standards for the Property.

6.1 Cleanup Levels

Soil cleanup levels were selected to protect human health and the environment. MTCA Method B soil cleanup levels for unrestricted land use have been selected for the Site.

Table 3 below summarizes the specific cleanup levels for the Site COCs in soil.

Table 3 – Proposed Cleanup Levels

Contaminant of Concern	Method A Soil Cleanup Level in mg/kg[a]	Method B Soil Cleanup Level in mg/kg[c]	Generic Method B Sub-Slab Screening Level in µg/m³ [d]	Site-Specific Method B Sub-Slab Screening Level in µg/m³ [e]
TPH-G	100/30 [b]	3,413	4,700	16,798

Notes:

a. MTCA Method A soil cleanup level for unrestricted land use.
b. 100 mg/kg for gasoline mixtures without benzene and for which ethylbenzene, toluene, and xylenes together are less than 1% of the gasoline mixture; 30 mg/kg for all other gasoline mixtures.
c. Calculated site-specific MTCA Method B direct contact cleanup level for unrestricted land use.
d. Generic Method B sub-slab soil gas screening levels.
e. Calculated site-specific Method B sub-slab soil gas screening levels.

7.0 CONCLUSIONS

Previous cleanup actions have greatly reduced petroleum impacts at the Site. The concentrations and mobility of petroleum hydrocarbons remaining at the Site have decreased significantly. Long-term monitoring results have shown that groundwater meets applicable MTCA Method A cleanup levels. Results of this study have shown that residual petroleum hydrocarbons present in Site soil no longer pose a direct contact risk and vapor intrusion does not appear to be of concern to existing or future buildings. The Site is in compliance with site-specific MTCA Method B soil direct contact cleanup levels and sub-slab soil vapor screening levels. Therefore, we respectfully request a no further action letter opinion from Ecology.

8.0 LIMITATIONS

Work for this project was performed, and this report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. This report is intended for the exclusive use of the Secret Assets, LLC. for specific application to the referenced property. This work plan is not meant to represent a legal opinion. No other warranty, express or implied, is made.

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Table 1 - Analytical Results for Soil Samples

Sample ID	MTCA Method A Cleanup Level [a]	MTCA Method B Cleanup Level [b]	P-1 7-9	P-1 11-13	P-2 8-10	P-2 10-12	P-3 6-8	P-3 11-13	P-3 13-15	P-4 6-8	P-4 13-15
Sampling Date			4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019
Gasoline Range Organics in mg/kg											
Gasoline	30/100 [c]	3413	6.5 U	6.1 U	6.2 U	6.4 U	**340**	**8.4**	5.9 U	6.3 U	6.3 U
Volatiles in mg/kg											
Methyl t-Butyl Ether	0.1		0.00082 U	0.00081 U	0.00085 U	0.0012 U	0.00088 U	0.00092 U	0.0011 U	0.0012 U	0.00091 U
Benzene	0.03		0.00082 U	0.00081 U	0.00085 U	0.0012 U	0.00088 U	0.00092 U	0.0011 U	0.0012 U	0.00091 U
Ethylbenzene	6		0.00082 U	0.00081 U	0.00085 U	0.0012 U	0.053 U	0.00092 U	0.0011 U	0.0012 U	0.00091 U
Toluene	7		0.0041 U	0.004 U	0.0043 U	0.006 U	0.0044 U	0.0046 U	0.0057 U	0.006 U	0.0046 U
m, p-Xylene			0.0016 U	0.0016 U	0.0017 U	0.0024 U	0.11 U	0.0018 U	0.0023 U	0.0024 U	0.0018 U
o-Xylene			0.00082 U	0.00081 U	0.00085 U	0.0012 U	0.053 U	0.00092 U	0.0011 U	0.0012 U	0.00091 U
Total Xylenes	9										
Volatile Petroleum Hydrocarbons in mg/kg											
C5-C6 Aliphatics			5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
>C6-C8 Aliphatics			5 U	5 U	5 U	5 U	**140**	5 U	5 U	5 U	5 U
>C8-C10 Aliphatics			5 U	5 U	5 U	5 U	**150**	5 U	5 U	5 U	5 U
>C10-C12 Aliphatics			5 U	5 U	5 U	5 U	**92**	5 U	5 U	5 U	5 U
Total Aliphatics			NA	NA	NA	NA	**380**	NA	NA	NA	NA
>C8-C10 Aromatics			5 U	5 U	5 U	5 U	**82**	5 U	5 U	5 U	5 U
>C10-C12 Aromatics			5 U	5 U	5 U	5 U	**31**	5 U	5 U	5 U	5 U
>C12-C13 Aromatics			5 U	5 U	5 U	5 U	**18**	5 U	5 U	5 U	5 U
Total Aromatics			NA	NA	NA	NA	**130**	NA	NA	NA	NA

Table 1 - Analytical Results for Soil Samples

Sample ID	MTCA Method A Cleanup Level [a]	MTCA Method B Cleanup Level [b]	P-5 8-10	P-5 10-12	P-5 13-15	P-6 6-8	P-6 10-12	P-6 13-15	P-7 8-10	P-7 10-12	P-7 13-15
Sampling Date			4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019
Gasoline Range Organics in mg/kg											
Gasoline	30/100 [c]	3413	**1300**	**840**	6 U	5.5 U	5.8 U	5.9 U	**72**	**9.9**	7.9 U
Volatiles in mg/kg											
Methyl t-Butyl Ether	0.1		0.065 U	0.065 U	0.00095 U	0.0009 U	0.00078 U	0.0011 U	0.00096 U	0.0009 U	0.0012 U
Benzene	0.03		0.065 U	0.065 U	0.00095 U	0.0009 U	0.00078 U	0.0011 U	0.00096 U	0.0009 U	0.0012 U
Ethylbenzene	6		**3.6**	**0.44**	0.00095 U	0.0009 U	0.00078 U	0.0011 U	0.00096 U	0.0009 U	0.0012 U
Toluene	7		0.32 U	0.33 U	0.0048 U	0.0045 U	0.0039 U	0.0056 U	0.0048 U	0.0045 U	0.0059 U
m, p-Xylene			0.13 U	0.13 U	0.0019 U	0.0018 U	0.0016 U	0.0022 U	0.0019 U	0.0018 U	0.0024 U
o-Xylene			0.065 U	0.065 U	0.00095 U	0.0009 U	0.00078 U	0.0011 U	0.00096 U	0.0009 U	0.0012 U
Total Xylenes	9										
Volatile Petroleum Hydrocarbons in mg/kg											
C5-C6 Aliphatics			**17**	**14**	5 U	5 U	5 U	5 U	5 U	5 U	5 U
>C6-C8 Aliphatics			**350**	**190**	5 U	5 U	5 U	5 U	**21**	**7.5**	5 U
>C8-C10 Aliphatics			**390**	**180**	5 U	5 U	5 U	5 U	**25**	5 U	5 U
>C10-C12 Aliphatics			**410**	**180**	5 U	5 U	5 U	5 U	**25**	5 U	5 U
Total Aliphatics			**1200**	**560**	NA	NA	NA	NA	**71**	**7.5**	NA
>C8-C10 Aromatics			**280**	**120**	5 U	5 U	5 U	5 U	**17**	5 U	5 U
>C10-C12 Aromatics			**200**	**95**	5 U	5 U	5 U	5 U	**7.1**	5 U	5 U
>C12-C13 Aromatics			**89**	**45**	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Total Aromatics			**570**	**260**	NA	NA	NA	NA	**24**	NA	NA

Table 1 - Analytical Results for Soil Samples

Sample ID	MTCA	MTCA	P-8 8-10	P-8 11-13	P-8 13-15	P-9 7-9	P-9 10-12	P-9 13-15	P-10 8-10	P-10 10-12	P-10 12-14
Sampling Date	Method A Cleanup Level [a]	Method B Cleanup Level [b]	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019	4/24/2019
Gasoline Range Organics in mg/kg											
Gasoline	30/100 [c]	3413	**250**	**440**	5.8 U	**220**	**19**	12 U	**760**	**230**	**9.2**
Volatiles in mg/kg											
Methyl t-Butyl Ether	0.1		0.001 U	0.00083 U	0.00098 U	0.0011 U	0.00088 U	0.00099 U	0.066 U	0.066 U	0.00097 U
Benzene	0.03		0.001 U	0.00083 U	0.00098 U	0.0011 U	0.00088 U	0.00099 U	0.066 U	0.066 U	0.00097 U
Ethylbenzene	6		0.001 U	0.00083 U	0.00098 U	0.0011 U	0.00088 U	0.00099 U	0.066 U	0.066 U	0.00097 U
Toluene	7		0.0051 U	0.0042 U	0.0049 U	0.0056 U	0.0044 U	0.0049 U	0.33 U	0.33 U	0.0049 U
m, p-Xylene			0.002 U	0.0042 U	0.002 U	0.0023 U	0.0018 U	0.002 U	0.13 U	0.13 U	0.0019 U
o-Xylene			0.001 U	0.00083 U	0.00098 U	0.0011 U	0.00088 U	0.00099 U	0.066 U	0.066 U	0.00097 U
Total Xylenes	9										
Volatile Petroleum Hydrocarbons in mg/kg											
C5-C6 Aliphatics			5 U	5 U	5 U	**6.3**	5 U	5 U	**17**	**5.8**	5 U
>C6-C8 Aliphatics			**14**	**150**	5 U	**24**	5 U	5 U	**190**	**61**	5 U
>C8-C10 Aliphatics			**57**	**190**	5 U	**62**	**6.2**	5 U	**230**	**81**	5 U
>C10-C12 Aliphatics			**100**	**120**	5 U	**82**	**8.3**	5 U	**240**	**82**	5 U
Total Aliphatics			**170**	**460**	NA	**170**	**15**	NA	**680**	**230**	NA
>C8-C10 Aromatics			**49**	**110**	5 U	**48**	5 U	5 U	**160**	**55**	5 U
>C10-C12 Aromatics			**33**	**42**	5 U	**23**	5 U	5 U	**94**	**29**	5 U
>C12-C13 Aromatics			**16**	**21**	5 U	**10**	5 U	5 U	**44**	**13**	5 U
Total Aromatics			**98**	**170**	NA	**81**	NA	NA	**300**	**97**	NA

Table 1 - Analytical Results for Soil Samples

Sample ID	MTCA Method A Cleanup Level [a]	MTCA Method B Cleanup Level [b]	P-11 6-8	P-11 8-10	P-11 13-15
Sampling Date			4/24/2019	4/24/2019	4/24/2019
Gasoline Range Organics in mg/kg					
Gasoline	30/100 [c]	3413	7.8 U	**980**	7.2 U
Volatiles in mg/kg					
Methyl t-Butyl Ether	0.1		0.0013 U	0.049 U	0.0012 U
Benzene	0.03		0.0013 U	0.049 U	0.0012 U
Ethylbenzene	6		0.0013 U	**1.4**	0.0012 U
Toluene	7		0.0063 U	0.24 U	0.0059 U
m, p-Xylene			0.0025 U	**1.3**	0.0024 U
o-Xylene			0.0013 U	**0.056**	0.0012 U
Total Xylenes	9			**1.4**	
Volatile Petroleum Hydrocarbons in mg/kg					
C5-C6 Aliphatics			5 U	**31**	5 U
>C6-C8 Aliphatics			5 U	**380**	5 U
>C8-C10 Aliphatics			5 U	**150**	5 U
>C10-C12 Aliphatics			5 U	**230**	5 U
Total Aliphatics			NA	**790**	NA
>C8-C10 Aromatics			5 U	**210**	5 U
>C10-C12 Aromatics			5 U	**120**	5 U
>C12-C13 Aromatics			5 U	**41**	5 U
Total Aromatics			NA	**370**	NA

a. Method A soil cleanup level for unrestricted land use.
b. Method B site-specific soil cleanup level - calculated.
c. 100 mg/kg for gasoline mixtures without benzene, otherwise, 30 mg/kg.
U = Not detected at detection limit indicated.
Detected concentrations are bolded.
Concentrations that exceed MTCA Method B cleanup level are shaded.

Table 2 - Analytical Results for Soil Vapor Samples

Sample ID	MTCA Method B Sub-Slab Screening Level [a]	MTCA Method B Calculated Sub-Slab Screening Level [b]	P-1	P-2	P-3	P-4	P-7
Sampling Date			3/8/2019	3/8/2019	3/8/2019	3/8/2019	3/7/2019
EPA-TO-15 in ug/m3							
APH, EC5 - 8 Aliphatics			**1300**	**197**	**2380**	**1680**	**9010 J**
APH, EC9 - 12 Aliphatics			**1370**	**170**	**403**	**526**	**2600 J**
Aromatic Hydrocarbon (EC9-10)			31.4 U	31.4 U	31.4 U	31.4 U	31.4 U
Benzene	46		**2.26**	**1.94**	**2.35**	1.25 U	**6.71**
Ethylbenzene	15000		**17.1**	1.47 U	**6.81**	1.47 U	1.47 U
m, p-Xylene	1500		**80.8**	**5.5**	**54**	**4.57**	**5.89**
o-Xylene			**11.7**	**1.69**	**19.1**	1.44 U	**1.69**
Toluene	76000		**55.9**	**8.31**	**127**	**6.3**	**10.4**
Naphthalene	46		0.299 U	0.299 U	**0.302**	0.299 U	0.299 U
Total Petroleum	4700	16798	**2837.8**	**384**	**2992.6**	**2216.9**	**11635**
Helium in ppt			157 U	180 U	163 U	172 U	156 U

a. MTCA Method B generic sub-slab soil gas screening level.
b. MTCA Method B calculated sub-slab soil gas screening level.
APH = Air-Phase Petroleum Hydrocarbons
U = Not detected at reporting limit indicated.
J = Estimated value.
Detected concentrations are bolded.
Concentrations that exceed the calculated MTCA Method B sub-slab soil gas screening level are shaded.

Project Location

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

0 1,000 2,000 4,000 Feet

N

Ken's Auto Wash
Ellensburg, Washington

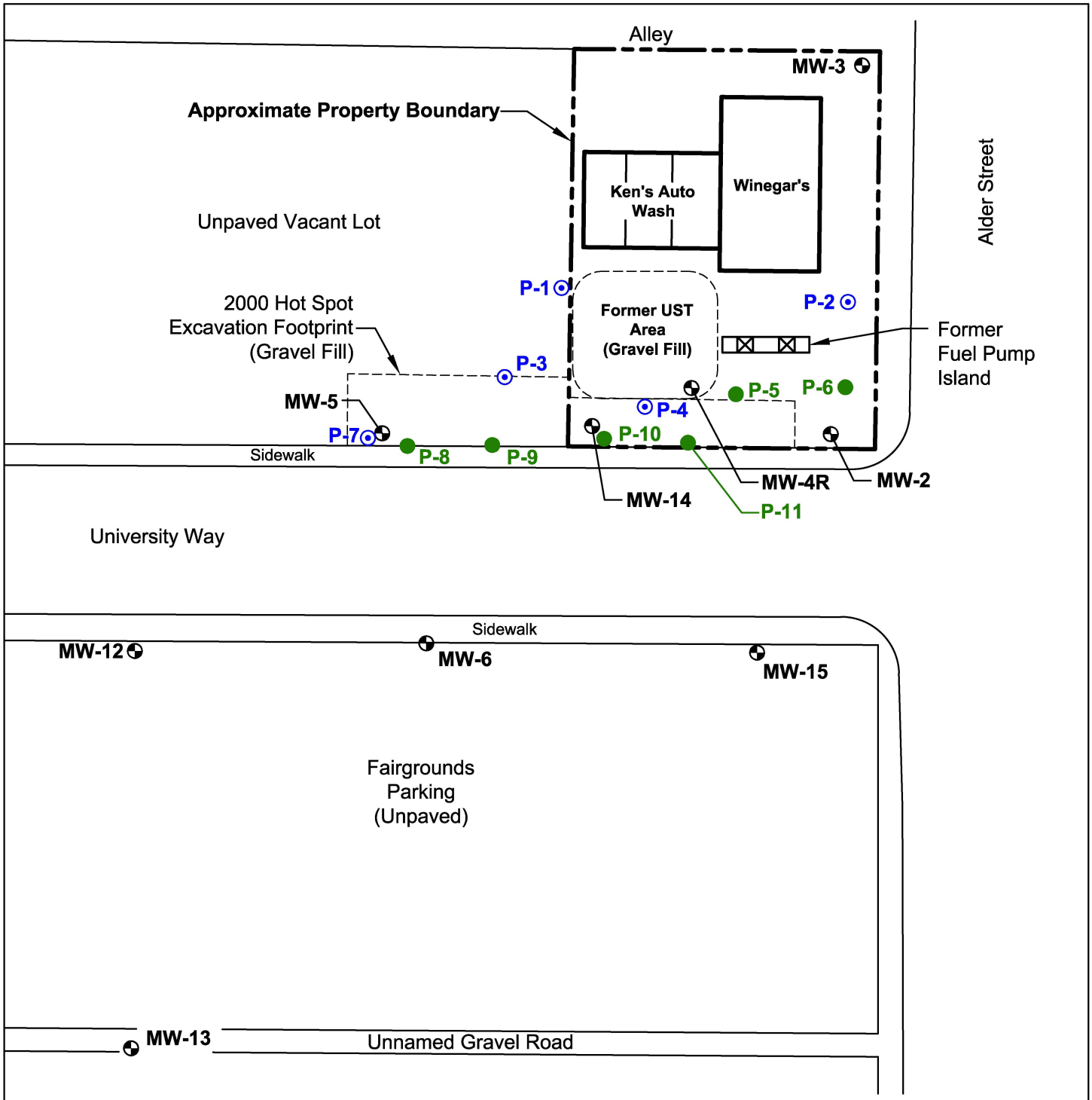
Vicinity Map

7168-10 12/18

HARTCROWSER

Figure 1

Document Path: L:\Notebooks\7716810_Ken's Auto Wash\GIS\7716810-AB (VMap).mxd Date: 12/17/2018 User Name: ericlindquist



Note: Base map prepared from drawing provided by Sage Earth Sciences titled "Proposed Addtional Monitoring Well and ORC Injections Locations," dated January 1998.

0 50 100
Scale in Feet

P-5 ● 2019 Push Probe

P-1 ⊙ 2019 Push Probe and Temporary Soil Vapor Well

MW-6 ◒ Hart Crowser Monitoring Well

N

Ken's Auto Wash
Ellensburg, Washington

Site and Exploration Plan

7168-10 4/19

HARTCROWSER

Figure
2

EDF 04/29/19 716810-029 (SPlan).dwg

APPENDIX A
Field Exploration Methods and Exploration Logs

APPENDIX A
FIELD EXPLORATION METHODS AND EXPLORATION LOGS

This appendix documents the field exploration methods we used to further assess the environmental quality of the soil and soil-vapor at the Site. The sections are:

- Explorations and Their Location;
- Push-Probe Borings;
- Soil Sampling Procedures;
- Soil Screening and Analysis;
- Soil-Vapor Sampling Procedures;
- Sample Handling and Laboratory Analysis; and
- Investigation-Derived Waste Storage and Disposal.

Explorations and Their Location

Subsurface explorations for the site characterization were push-probe borings. Soil-vapor samples were collected from five of the push-probe borings. Exploration logs in this appendix show our interpretation of the sampling and testing data. The logs indicate the depth at which the physical characteristics of soil change; however, the change may be gradual. In the field, we classified the samples taken from the explorations according to the methods on Figure A-1 – Key to Exploration Logs. This figure's legend explains the symbols and abbreviations used in the logs.

Figure 2 shows where the explorations were located.

Push-Probe Borings

Eleven push-probe borings (P-1 through P-11) were drilled to depths of 15 feet bgs on March 7 and April 24, 2019. The borings were advanced with an approximately 2-inch diameter direct push-probe using a truck-mounted drill rig by a licensed driller subcontracted to Hart Crowser. An environmental geologist from Hart Crowser continuously observed the drilling. We obtained soil samples at 2.5-foot depth intervals. All soil samples were classified in accordance with American Society for Testing and Materials (ASTM) Method D2488, and pertinent characteristics of the subsurface conditions were recorded on boring logs. Detailed logs for each boring are presented at the end of this appendix.

Soil Sampling Procedures

Soil samples were collected for chemical analysis directly from the push-probe sleeve with a clean stainless-steel spoon and/or clean disposable nitrile gloves and placed in pre-cleaned, laboratory-supplied glass sample jars and 40-milliliter (ml) volatile organics analysis (VOA) bottles supplied by the laboratory. VOA bottles were filled with a 5-gram soil plug according to Environmental Protection Agency (EPA) Method 5035 procedures. The jars were sealed and labeled. Filled sample jars were stored in an ice-chilled cooler and submitted to the analytical laboratory under chain-of-custody protocols.

Soil Screening and Analysis

Field screening results were used as a general guideline to identify potential chemical constituents in soil samples. In addition, field screening results were used as a basis for selecting soil samples for chemical analysis.

Soil samples were field screened at 2.5-foot depth intervals for evidence of volatile organic compounds (VOCs)-related impacts using (1) visual and olfactory observations, (2) sheen screening, and (3) headspace vapor screening using a MultiRAE photoionization detector (PID). The effectiveness of field screening varies with temperature, moisture content, organic content, soil type, and age of the constituents. Visual examination consists of inspecting the soil for evidence of discoloration, staining, and/or abnormal components. Visual screening is generally more effective when impacts are related to heavy petroleum hydrocarbons, such as motor or hydraulic oil, or when hydrocarbon concentrations are high.

We tested water sheen by placing a small volume of soil in a pan of water and observing the water surface for signs of sheen. Sheens were classified as follows:

No sheen (NS)	No visible sheen on water surface.
Slight sheen (SS)	Light colorless film, spotty to globular; spread is irregular, not rapid; areas of no sheen remain; film dissipates rapidly.
Moderate sheen (MS)	Light to heavy film, may have some color or iridescence; globular to stringy; spread is irregular to flowing; few remaining areas of no sheen on water surface.
Heavy sheen (HS)	Heavy colorful film with iridescence; stringy; spread is rapid; sheen flows off the sample; most of the water surface may be covered with sheen.

Headspace vapor screening is intended to indicate the presence of volatile organic vapors; it involves placing a soil sample in a plastic sample bag. Air is captured in the bag and the bag is shaken to expose the soil to the air trapped in the bag. The PID probe is then inserted in the bag and the instrument measures the concentration of organic vapors in the sample headspace. The highest vapor reading for each sample is then recorded on the boring log. The PID measures concentrations in parts per million (ppm), is calibrated to isobutylene, and can typically quantify organic vapor concentrations in the range of 0 to 1,000 ppm.

All field screening observations were recorded on the boring logs, and this information was used to select which samples to submit for chemical analysis. In general, samples with the highest readings were selected for analysis.

Soil-Vapor Sampling Procedures

Soil Vapor samples were collected from five borings (P-1, P-2, P-3, P-4, and P-7) on March 7 and 8, 2019, and submitted for chemical analysis.

Soil vapor samples were collected from approximately 4 feet bgs. A temporary probe casing and vapor collection screen was advanced into the bore hole to approximately 4 feet and sealed with bentonite clay. The sampling assembly was shrouded with helium gas as a helium detector was used to draw representative soil vapor from the sample point and confirmed to be airtight. The tubing was purged using a peristaltic pump to remove ambient air. One liter of soil vapor was withdrawn through a ¼ inch Teflon tubing into a Summa canister, using a flow controller set at a rate of no more than 200mL/min. After sample collection, the temporary casing and sampling assembly was removed, and drilling continued to the desired depth of 15 feet bgs.

Sample Handling and Laboratory Analysis

At the time of collection, soil samples were placed in an ice-chilled cooler and submitted to the laboratory using chain-of-custody protocols. Soil samples were submitted to OnSite Environmental Inc of Redmond, Washington, for chemical analysis. The soil vapor samples were submitted to Fremont Analytical Inc of Seattle, Washington, for chemical analysis.

Investigation-Derived Waste Storage and Disposal

Soil cuttings generated during exploration activities and groundwater sampling were placed in separate labeled drums and left on-site, pending receipt of chemical analysis results from the laboratory and determination of appropriate disposal procedures.

Sample Description

Identification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field nor laboratory testing unless presented herein. ASTM D 2488 visual-manual identification methods were used as a guide. Where laboratory testing confirmed visual-manual identifications, then ASTM D 2487 was used to classify the soils.

Relative Density/Consistency

Soil density/consistency in borings is related primarily to the standard penetration resistance (N). Soil density/consistency in test pits and probes is estimated based on visual observation and is presented parenthetically on the logs.

SAND or GRAVEL Relative Density	N (Blows/Foot)	SILT or CLAY Consistency	N (Blows/Foot)
Very loose	0 to 4	Very soft	0 to 1
Loose	5 to 10	Soft	2 to 4
Medium dense	11 to 30	Medium stiff	5 to 8
Dense	31 to 50	Stiff	9 to 15
Very dense	>50	Very stiff	16 to 30
		Hard	>30

Moisture

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

USCS Soil Classification Chart (ASTM D 2487)

Major Divisions			Symbols: Graph	Symbols: USCS	Typical Descriptions
Coarse Grained Soils: More than 50% of Material Retained on No. 200 Sieve	Gravel and Gravelly Soils: More than 50% of Coarse Fraction Retained on No. 4 Sieve	Clean Gravels (<5% fines)		GW	Well-Graded Gravel; Well-Graded Gravel with Sand
				GP	Poorly Graded Gravel; Poorly Graded Gravel with Sand
		Gravels (5-12% fines)		GW-GM	Well-Graded Gravel with Silt; Well-Graded Gravel with Silt and Sand
				GW-GC	Well-Graded Gravel with Clay; Well-Graded Gravel with Clay and Sand
				GP-GM	Poorly Graded Gravel with Silt; Poorly Graded Gravel with Silt and Sand
				GP-GC	Poorly Graded Gravel with Clay; Poorly Graded Gravel with Clay and Sand
		Gravels with Fines (>12% fines)		GM	Silty Gravel; Silty Gravel with Sand
				GC	Clayey Gravel; Clayey Gravel with Sand
	Sand and Sandy Soils: More than 50% of Coarse Fraction Passing No. 4 Sieve	Sands with few Fines (<5% fines)		SW	Well-Graded Sand; Well-Graded Sand with Gravel
				SP	Poorly Graded Sand; Poorly Graded Sand with Gravel
		Sands (5-12% fines)		SW-SM	Well-Graded Sand with Silt Well-Graded Sand with Silt and Gravel
				SW-SC	Well-Graded Sand with Clay; Well-Graded Sand with Clay and Gravel
				SP-SM	Poorly Graded Sand with Silt; Poorly Graded Sand with Silt and Gravel
				SP-SC	Poorly Graded Sand with Clay; Poorly Graded Sand with Clay and Gravel
		Sands with Fines (>12% fines)		SM	Silty Sand; Silty Sand with Gravel
				SC	Clayey Sand; Clayey Sand with Gravel
Fine Grained Soils: More than 50% of Material Passing No. 200 Sieve	Silts			ML	Silt; Silt with Sand or Gravel; Sandy or Gravelly Silt
				MH	Elastic Silt; Elastic Silt with Sand or Gravel; Sandy or Gravelly Elastic Silt
	Silty Clay (based on Atterberg Limits)			CL-ML	Silty Clay; Silty Clay with Sand or Gravel; Gravelly or Sandy Silty Clay
	Clays			CL	Lean Clay; Lean Clay with Sand or Gravel; Sandy or Gravelly Lean Clay
				CH	Fat Clay; Fat Clay with Sand or Gravel; Sandy or Gravelly Fat Clay
	Organics			OL/OH	Organic Soil; Organic Soil with Sand or Gravel; Sandy or Gravelly Organic Soil
Highly Organic (>50% organic material)				PT	Peat - Decomposing Vegetation - Fibrous to Amorphous Texture

Minor Constituents

	Estimated Percentage
Sand, Gravel	
Trace	<5
Few	5 - 15
Cobbles, Boulders	
Trace	<5
Few	5 - 10
Little	15 - 25
Some	30 - 45

Soil Test Symbols

%F	Percent Passing No. 200 Sieve
AL	Atterberg Limits (%)
	Liquid Limit (LL)
	Water Content (WC)
	Plastic Limit (PL)
CA	Chemical Analysis
CAUC	Consolidated Anisotropic Undrained Compression
CAUE	Consolidated Anisotropic Undrained Extension
CBR	California Bearing Ratio
CIDC	Consolidated Drained Isotropic Triaxial Compression
CIUC	Consolidated Isotropic Undrained Compression
CK0DC	Consolidated Drained k0 Triaxial Compression
CK0DSS	Consolidated k0 Undrained Direct Simple Shear
CK0UC	Consolidated k0 Undrained Compression
CK0UE	Consolidated k0 Undrained Extension
CRSCN	Constant Rate of Strain Consolidation
DSS	Direct Simple Shear
DT	In Situ Density
GS	Grain Size Classification
HYD	Hydrometer
ILCN	Incremental Load Consolidation
K0CN	k0 Consolidation
kc	Constant Head Permeability
kf	Falling Head Permeability
MD	Moisture Density Relationship
OC	Organic Content
OT	Tests by Others
P	Pressuremeter
PID	Photoionization Detector Reading
PP	Pocket Penetrometer
SG	Specific Gravity
TRS	Torsional Ring Shear
TV	Torvane
UC	Unconfined Compression
UUC	Unconsolidated Undrained Triaxial Compression
VS	Vane Shear
WC	Water Content (%)

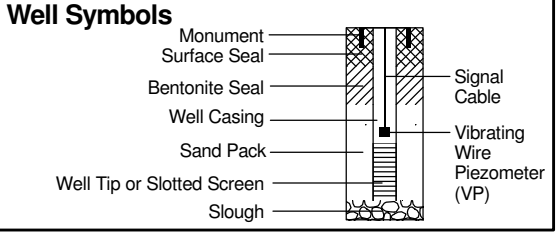
Groundwater Indicators

- Groundwater Level on Date or At Time of Drilling (ATD)
- Groundwater Level on Date Measured in Piezometer
- Groundwater Seepage (Test Pits)

Sample Symbols

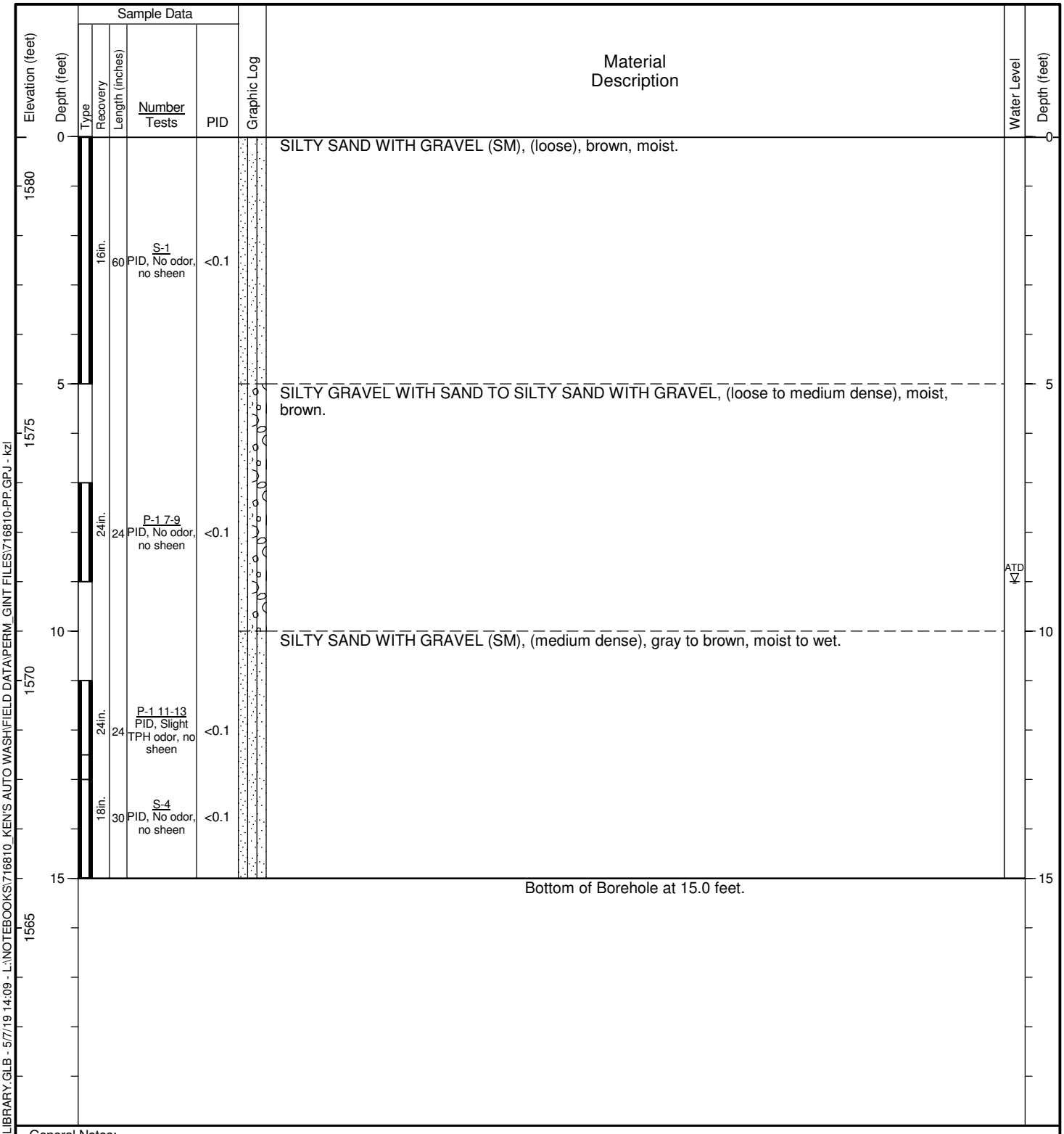
- 1.5" I.D. Split Spoon
- 3.0" O.D. Split Spoon
- Modified California Sampler
- Core Run
- Sonic Core
- Thin-walled Sampler
- Grab
- Cuttings

Well Symbols



.R CR WSER	Project: Ken's Auto Location: Ellensburg, WA Project No.: 7168-10	**Key to Exploration Logs**	Figure **A-1** Sheet **1 of 1**

Date Started: 4/24/19	Date Completed: 4/24/19	Contractor/Crew: Cascade Drilling, L.P.	
Logged by: W. McDonald	Checked by: J. Green	Rig Model/Type: GeoProbe® 6600	
Location: Lat: 47.002354 Long: -120.532316		Total Depth: 15 feet	Depth to Groundwater: 9 feet
Ground Surface Elevation: 1581 feet		Comments: Location and ground surface elevations are approximate.	
Horizontal Datum: WGS 84			
Vertical Datum: NAVD 88			



General Notes:
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Material descriptions and stratum lines are interpretive and actual changes may be gradual. Solid stratum lines indicate distinct contact between material strata or geologic units. Dashed stratum lines indicate gradual or approximate change between material strata or geologic units.
3. USCS designations are based on visual-manual identification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.

HARTCROWSER	Project: Ken's Auto Location: Ellensburg, WA Project No.: 7168-10	Push Probe Log **P-1**	Figure **A-2** Sheet **1 of 1**

Date Started: 4/24/19	Date Completed: 4/24/19	Contractor/Crew: Cascade Drilling, L.P.	
Logged by: W. McDonald	Checked by: J. Green	Rig Model/Type: GeoProbe® 6600	
Location: Lat: 47.002368 Long: -120.531880		Total Depth: 15 feet	Depth to Groundwater: 10 feet
Ground Surface Elevation: 1584 feet		Comments: Location and ground surface elevations are approximate.	
Horizontal Datum: WGS 84			
Vertical Datum: NAVD 88			

Elevation (feet)	Depth (feet)	Sample Data: Type	Recovery	Length (inches)	Number / Tests	PID	Graphic Log	Material Description	Water Level	Depth (feet)
1584	0							SANDY SILT (ML), (very dense), dark brown, moist.		0
			0in.	60	S-1 PID, No odor, no sheen	<0.1				
1580	5							SILTY GRAVEL WITH SAND (GM), (loose to medium dense), brown, moist.		5
			36in.	36	S-2 PID, No odor, no sheen	<0.1				
1575			24in.	24	P-2 8-10 PID, No odor, no sheen	<0.1				
	10							Becomes wet.	ATD	10
			24in.	24	P-2 10-12 PID, No odor, no sheen	<0.1				
1570			24in.	24	P-2 13-15 PID, No odor, no sheen	<0.1				
	15							Bottom of Borehole at 15.0 feet.		15
1565										

General Notes:
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Material descriptions and stratum lines are interpretive and actual changes may be gradual. Solid stratum lines indicate distinct contact between material strata or geologic units. Dashed stratum lines indicate gradual or approximate change between material strata or geologic units.
3. USCS designations are based on visual-manual identification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.

HC PUSH PROBE - J:\GINT\HC_LIBRARY.GLB - 5/7/19 14:09 - L:\NOTEBOOKS\716810_KEN'S AUTO WASH\FIELD DATA\PERM_GINT FILES\716810-PP.GPJ - kzl

HARTCROWSER	Project: Ken's Auto Location: Ellensburg, WA Project No.: 7168-10	Push Probe Log **P-2**	Figure **A-3** Sheet **1 of 1**

Date Started: 4/24/19	Date Completed: 4/24/19	Contractor/Crew: Cascade Drilling, L.P.	
Logged by: W. McDonald	Checked by: J. Green	Rig Model/Type: GeoProbe® 6600	
Location: Lat: 47.002288 Long: -120.532349		Total Depth: 15 feet	Depth to Groundwater: 10 feet
Ground Surface Elevation: 1581 feet		Comments: Location and ground surface elevations are approximate.	
Horizontal Datum: WGS 84			
Vertical Datum: NAVD 88			

Elevation (feet)	Depth (feet)	Sample Data: Type	Recovery	Length (inches)	Number / Tests	PID	Graphic Log	Material Description	Water Level	Depth (feet)
1581	0							SANDY SILT (ML), (soft), dark brown, moist to wet.		0
		24in.	60		S-1 PID, No odor, no sheen	<0.1				
1580										
	5							POORLY GRADED GRAVEL WITH SAND (GP), gray, moist.		5
1575		24in.	24		P-3 6-8 PID, Slight TPH odor, no sheen	<0.1				
	10							SILTY GRAVEL WITH SAND (GM), (medium dense), dark gray, saturated.	ATD ▽	10
1570		24in.	24		P-3 11-13 PID, No odor, no sheen	<0.1				
		24in.	24		P-3 13-15 PID, No odor, no sheen	<0.1				
	15							SANDY SILT (ML), (dense), dark gray, wet.		15
1565								Bottom of Borehole at 15.0 feet.		

General Notes:
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Material descriptions and stratum lines are interpretive and actual changes may be gradual. Solid stratum lines indicate distinct contact between material strata or geologic units. Dashed stratum lines indicate gradual or approximate change between material strata or geologic units.
3. USCS designations are based on visual-manual identification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.

HC PUSH PROBE - J:\GINT\HC_LIBRARY.GLB - 5/7/19 14:09 - L:\NOTEBOOKS\716810_KEN'S AUTO WASH\FIELD DATA\PERM_GINT FILES\716810-PP.GPJ - kzl

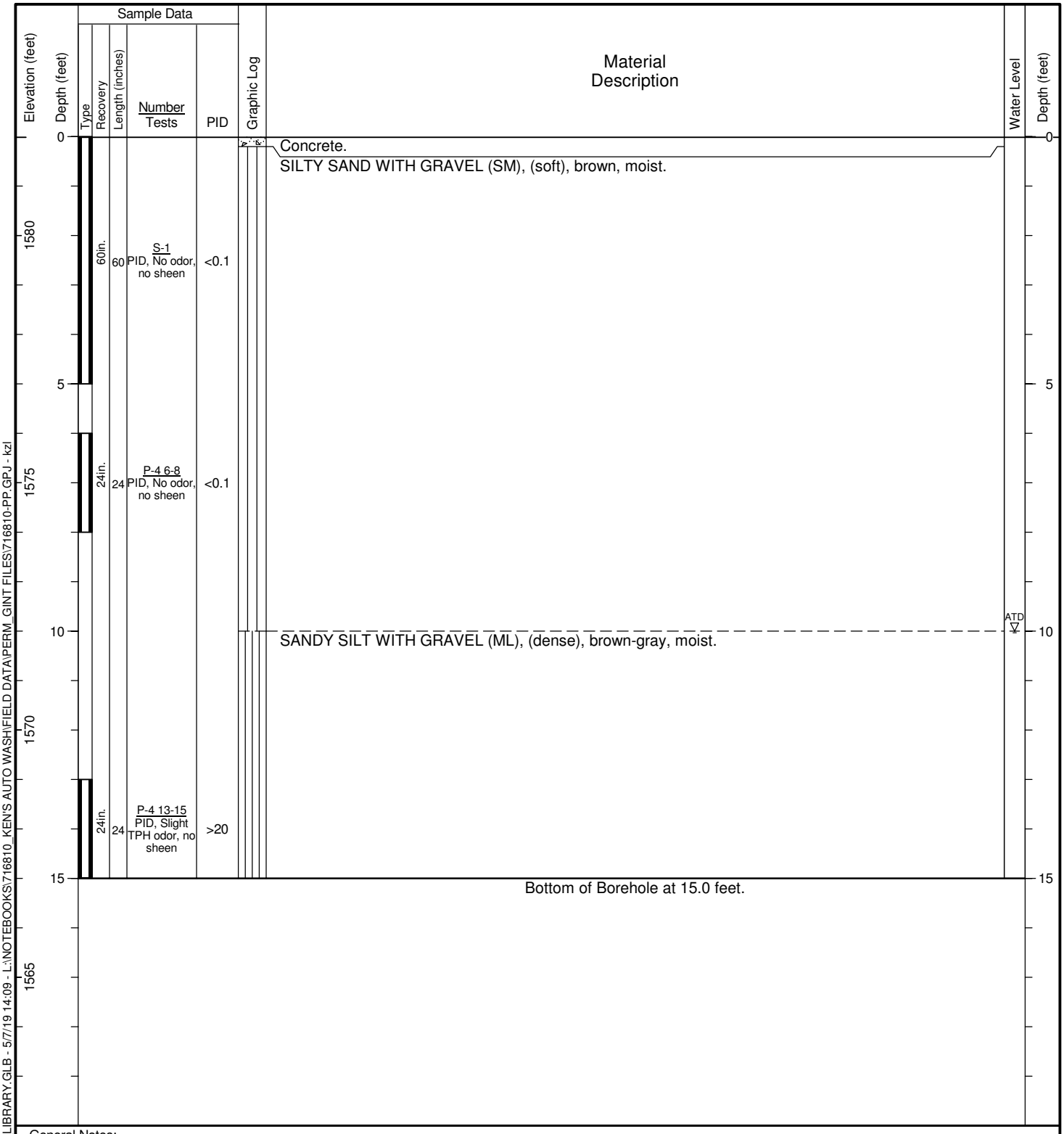
HARTCROWSER

Project: Ken's Auto
Location: Ellensburg, WA
Project No.: 7168-10

Push Probe Log
P-3

Figure **A-4**
Sheet **1 of 1**

Date Started: 4/24/19	Date Completed: 4/24/19	Contractor/Crew: Cascade Drilling, L.P.	
Logged by: W. McDonald	Checked by: J. Green	Rig Model/Type: GeoProbe® 6600	
Location: Lat: 47.002249 Long: -120.532152		Total Depth: 15 feet	Depth to Groundwater: 10 feet
Ground Surface Elevation: 1582 feet		Comments: Location and ground surface elevations are approximate.	
Horizontal Datum: WGS 84			
Vertical Datum: NAVD 88			



General Notes:
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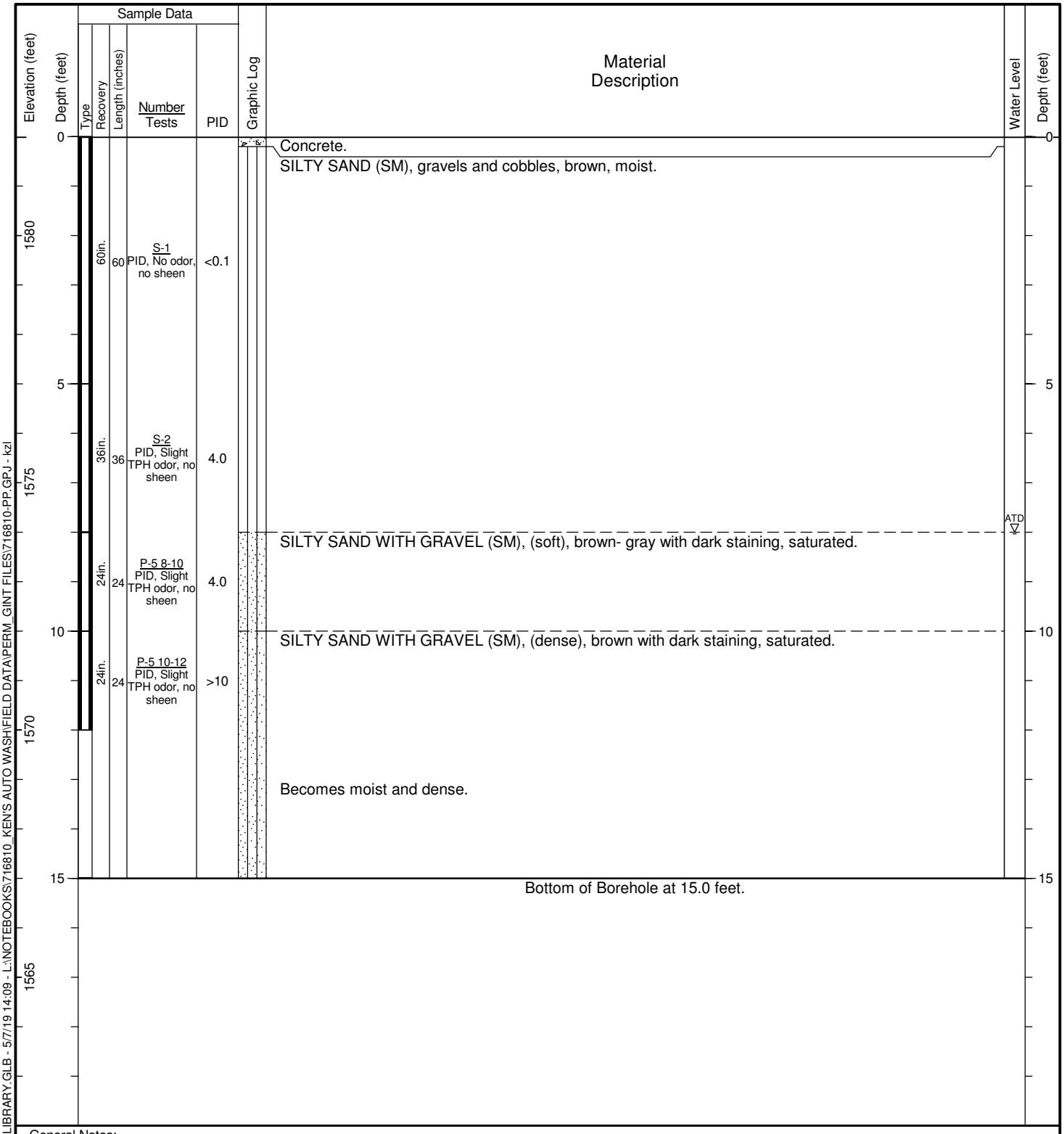
2. Material descriptions and stratum lines are interpretive and actual changes may be gradual. Solid stratum lines indicate distinct contact between material strata or geologic units. Dashed stratum lines indicate gradual or approximate change between material strata or geologic units.
3. USCS designations are based on visual-manual identification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.

HARTCROWSER	Project: Ken's Auto Location: Ellensburg, WA Project No.: 7168-10	Push Probe Log **P-4**	Figure **A-5** Sheet **1 of 1**

Date Started: 4/24/19	Date Completed: 4/24/19	Contractor/Crew: Cascade Drilling, L.P.	
Logged by: W. McDonald	Checked by: J. Green	Rig Model/Type: GeoProbe® 6600	
Location: Lat: 47.002237 Long: -120.532073		Total Depth: 15 feet	Depth to Groundwater: 8 feet
Ground Surface Elevation: 1582 feet		Comments: Location and ground surface elevations are approximate.	
Horizontal Datum: WGS 84			
Vertical Datum: NAVD 88			



General Notes:
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Material descriptions and stratum lines are interpretive and actual changes may be gradual. Solid stratum lines indicate distinct contact between material strata or geologic units. Dashed stratum lines indicate gradual or approximate change between material strata or geologic units.
3. USCS designations are based on visual-manual identification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.

HARTCROWSER	Project: Ken's Auto Location: Ellensburg, WA Project No.: 7168-10	Push Probe Log **P-5**	Figure **A-6** Sheet **1 of 1**

Date Started: 4/24/19	Date Completed: 4/24/19	Contractor/Crew: Cascade Drilling, L.P.	
Logged by: W. McDonald	Checked by: J. Green	Rig Model/Type: GeoProbe® 6600	
Location: Lat: 47.002253 Long: -120.531895		Total Depth: 15 feet	Depth to Groundwater: 10 feet
Ground Surface Elevation: 1583 feet		Comments: Location and ground surface elevations are approximate.	
Horizontal Datum: WGS 84			
Vertical Datum: NAVD 88			

Elevation (feet)	Depth (feet)	Sample Data: Type	Recovery	Length (inches)	Number / Tests	PID	Graphic Log	Material Description	Water Level	Depth (feet)
	0							Concrete.		0
								SILTY SAND WITH GRAVEL (SM), brown, moist.		
1580			0in.	60	S-1 PID, No odor, no sheen	<0.1				
	5							SILTY GRAVEL WITH SAND (GM), (medium dense), gray-brown, moist.		5
			24in.	24	P-6 6-8 PID, No odor, no sheen	<0.1				
1575								Cobbles from 8 to 10 feet.		
	10		24in.	24	P-6 10-12 PID, No odor, no sheen	<0.1			ATD	10
1570										
	15		24in.	24	P-6 13-15 PID, No odor, no sheen	<0.1				15
								Bottom of Borehole at 15.0 feet.		
1565										

General Notes:
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Material descriptions and stratum lines are interpretive and actual changes may be gradual. Solid stratum lines indicate distinct contact between material strata or geologic units. Dashed stratum lines indicate gradual or approximate change between material strata or geologic units.
3. USCS designations are based on visual-manual identification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.

HARTCROWSER

Project: Ken's Auto
Location: Ellensburg, WA
Project No.: 7168-10

Push Probe Log
P-6

Figure **A-7**
Sheet **1 of 1**

Date Started: 4/24/19	Date Completed: 4/24/19	Contractor/Crew: Cascade Drilling, L.P.	
Logged by: W. McDonald	Checked by: J. Green	Rig Model/Type: GeoProbe® 6600	
Location: Lat: 47.002207 Long: -120.532507		Total Depth: 15 feet	Depth to Groundwater: 12 feet
Ground Surface Elevation: 1581 feet		Comments: Location and ground surface elevations are approximate.	
Horizontal Datum: WGS 84			
Vertical Datum: NAVD 88			

Elevation (feet)	Depth (feet)	Sample Data: Type	Recovery	Length (inches)	Number / Tests	PID	Graphic Log	Material Description	Water Level	Depth (feet)
1580	0							SILTY GRAVEL WITH SAND (GM), (loose), moist.		0
			42in.	60	S-1 PID, No odor, no sheen	<0.1				
1575	5		36in.	36	S-2 PID, No odor, no sheen	<0.1		Becomes dark brown.		5
			24in.	24	P-7 8-10 PID, No odor, no sheen	<0.1				
1570	10		24in.	24	P-7 10-12 PID, No odor, no sheen	0.3		SILTY SAND (SM), (loose), dark brown, moist to wet.	ATD	10
								POORLY GRADED GRAVEL WITH SAND (GP).		
			24in.	24	P-7 13-15 PID, No odor, no sheen	<0.1				
1565	15							Bottom of Borehole at 15.0 feet.		15

General Notes:
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Material descriptions and stratum lines are interpretive and actual changes may be gradual. Solid stratum lines indicate distinct contact between material strata or geologic units. Dashed stratum lines indicate gradual or approximate change between material strata or geologic units.
3. USCS designations are based on visual-manual identification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.

HARTCROWSER	Project: Ken's Auto Location: Ellensburg, WA Project No.: 7168-10	Push Probe Log **P-7**	Figure **A-8** Sheet **1 of 1**

Date Started: 4/24/19	Date Completed: 4/24/19	Contractor/Crew: Cascade Drilling, L.P.	
Logged by: W. McDonald	Checked by: J. Green	Rig Model/Type: GeoProbe® 6600	
Location: Lat: 47.002216 Long: -120.532450		Total Depth: 15 feet	Depth to Groundwater: 10 feet
Ground Surface Elevation: 1581 feet		Comments: Location and ground surface elevations are approximate.	
Horizontal Datum: WGS 84			
Vertical Datum: NAVD 88			

Elevation (feet)	Depth (feet)	Sample Data: Type	Recovery	Length (inches)	Number / Tests	PID	Graphic Log	Material Description	Water Level	Depth (feet)
1580	0							SANDY GRAVEL TO GRAVELLY SAND (SM/GM), (loose), moist, brown.		0
			16in.	60	S-1 PID, No odor, no sheen	<0.1				
	5							SILTY GRAVEL WITH SAND (GM), (loose), brown, moist.		5
1575			24in.	24	P-8 8-10 PID, Slight odor, no sheen	<0.1				
	10							Becomes saturated with dark staining.	ATD ▽	10
1570			24in.	24	P-8 11-13 PID, Slight odor, no sheen	17		SILTY GRAVEL WITH SAND (GM), (loose), gray to gray-brown, saturated.		
			24in.	24	P-8 13-15 PID, Slight odor, no sheen	<0.1				
1565	15							Bottom of Borehole at 15.0 feet.		15

General Notes:
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Material descriptions and stratum lines are interpretive and actual changes may be gradual. Solid stratum lines indicate distinct contact between material strata or geologic units. Dashed stratum lines indicate gradual or approximate change between material strata or geologic units.
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HARTCROWSER

Project: Ken's Auto
Location: Ellensburg, WA
Project No.: 7168-10

Push Probe Log
P-8

Figure **A-9**
Sheet **1 of 1**

Date Started: 4/24/19	Date Completed: 4/24/19	Contractor/Crew: Cascade Drilling, L.P.	
Logged by: W. McDonald	Checked by: J. Green	Rig Model/Type: GeoProbe® 6600	
Location: Lat: 47.002221 Long: -120.532355		Total Depth: 15 feet	Depth to Groundwater: 10 feet
Ground Surface Elevation: 1581 feet		Comments: Location and ground surface elevations are approximate.	
Horizontal Datum: WGS 84			
Vertical Datum: NAVD 88			

Elevation (feet)	Depth (feet)	Sample Data: Type	Recovery	Length (inches)	Number / Tests	PID	Graphic Log	Material Description	Water Level	Depth (feet)
1580	0	36in.	60		S-1 PID, No odor, no sheen	<0.1		POORLY GRADED GRAVEL (GP).		0
								SANDY SILT (ML), (soft), brown, moist to wet.		
	5							SILTY SAND WITH GRAVEL (SM), (medium dense), gray to brown, moist.		5
1575		24in.	24		P-9 7-9 PID, Strong TPH odor, no sheen	165		Dark staining.		
								SILTY GRAVEL WITH SAND (GM), (medium dense), gray-brown, moist.	ATD	
	10	24in.	24		P-9 10-12 PID, Slight TPH odor, no sheen	<0.1		Becomes saturated.		10
1570										
		24in.	24		P-9 13-15 PID, Slight TPH odor, no sheen	<0.1				
	15							Bottom of Borehole at 15.0 feet.		15
1565										

General Notes:
1. Refer to Figure A-1 for explanation of descriptions and symbols.
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HARTCROWSER

Project: Ken's Auto
Location: Ellensburg, WA
Project No.: 7168-10

Push Probe Log
P-9

Figure **A-10**
Sheet **1 of 1**

Date Started: 4/24/19	Date Completed: 4/24/19	Contractor/Crew: Cascade Drilling, L.P.	
Logged by: W. McDonald	Checked by: J. Green	Rig Model/Type: GeoProbe® 6600	
Location: Lat: 47.002203 Long: -120.532228		Total Depth: 15 feet	Depth to Groundwater: 10 feet
Ground Surface Elevation: 1582 feet		Comments: Location and ground surface elevations are approximate.	
Horizontal Datum: WGS 84			
Vertical Datum: NAVD 88			

Elevation (feet)	Depth (feet)	Sample Data: Type	Recovery	Length (inches)	Number / Tests	PID	Graphic Log	Material Description	Water Level	Depth (feet)
1582	0							Concrete.		0
								SANDY SILT (ML), (soft), dark brown.		
1580			36in.	60	S-1 PID, No odor, no sheen	<0.1				
	5							SILTY GRAVEL WITH SAND (GM), (medium dense), dark brown, moist.		5
1575			30in.	30	S-2 PID, TPH-like odor, no sheen	<0.1				
			24in.	24	P-10 8-10 PID, Strong TPH odor, no sheen	77			ATD	
	10									10
1570			24in.	24	P-10 10-12 PID, Slight TPH odor, no sheen	0.2				
								SILTY GRAVEL WITH SAND (GM), gray-brown, dark staining.		
			24in.	24	P-10 12-14 PID, Slight TPH odor, no sheen	<0.1				
	15							Bottom of Borehole at 15.0 feet.		15
1565										

General Notes:
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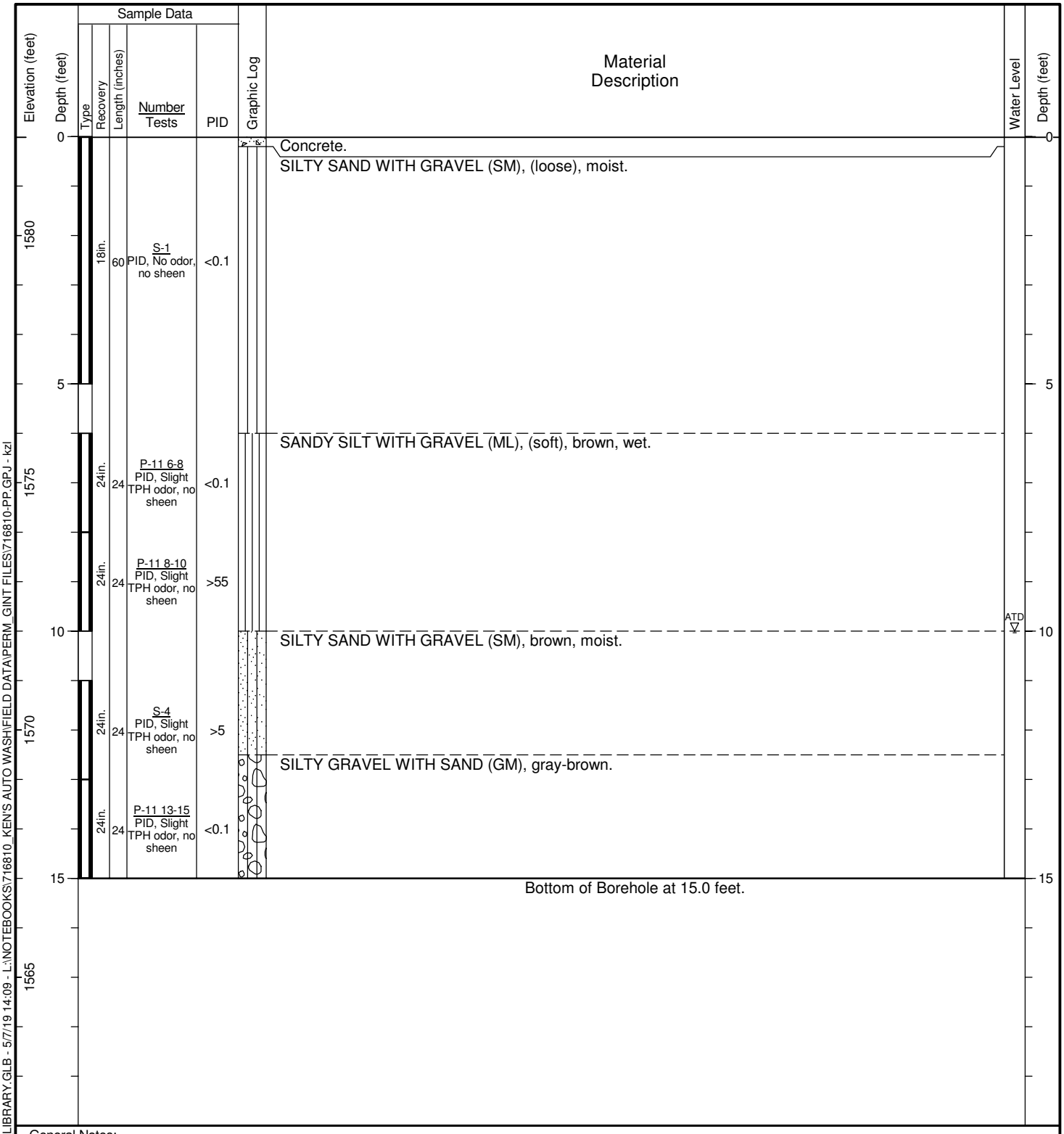
HARTCROWSER	Project: Ken's Auto Location: Ellensburg, WA Project No.: 7168-10	Push Probe Log **P-10**	Figure **A-11** Sheet **1 of 1**

Date Started: 4/24/19	Date Completed: 4/24/19	Contractor/Crew: Cascade Drilling, L.P.	
Logged by: W. McDonald	Checked by: J. Green	Rig Model/Type: GeoProbe® 6600	
Location: Lat: 47.002208 Long: -120.532120		Total Depth: 15 feet	Depth to Groundwater: 10 feet
Ground Surface Elevation: 1582 feet		Comments: Location and ground surface elevations are approximate.	
Horizontal Datum: WGS 84			
Vertical Datum: NAVD 88			



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HARTCROWSER	Project: Ken's Auto Location: Ellensburg, WA Project No.: 7168-10	Push Probe Log **P-11**	Figure **A-12** Sheet **1 of 1**

APPENDIX B
Chemical Data Quality Review and Laboratory Reports

APPENDIX B
CHEMICAL DATA QUALITY REVIEW AND LABORATORY REPORTS

Chemical Data Quality Review

On March 7 and 8, 2019, five soil vapor samples were collected and submitted to Fremont Analytical Inc. (Fremont) of Seattle, Washington, for analysis. Results were reported as Fremont Reference Number 1903110.

On April 24, 2019, 33 soil samples were collected and submitted to OnSite Environmental Inc. (OnSite) of Redmond, Washington, for analysis. Results were reported as OnSite Reference Number 1904300.

Selected soil samples were analyzed for one or more of:

- Gasoline-range TPH by Ecology method NWTPH-Gx;
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8021B;
- Volatile Petroleum Hydrocarbons;
- Volatile organic compounds (VOCs) by EPA method 8260C; and
- Percent moisture.

Selected soil vapor samples were analyzed for one or more of:

- Helium by Ecology Method of GC/TCD;
- TO-15 Petroleum Fractionation; and
- TO-15 (SIM) Naphthalene

The laboratory performed ongoing quality assurance/quality control (QA/QC) reviews. Hart Crowser reviewed a summary report to check that they met data quality objectives for the project.

The following criteria were evaluated during the standard data quality review process:

- Holding times;
- Reporting limits (RLs);
- Method blanks;
- Spike blank/spike blank duplicate (SB/SBD) recoveries;
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries;
- Laboratory duplicate relative percent difference (RPD); and
- Surrogate recoveries.

All of the data were acceptable for use with three qualifications. The complete laboratory reports are at the end of this appendix. The data review is summarized below.

Sample Receiving Notes

No sample receiving discrepancies were noted by the laboratory. Discrepancies from the chains of custody (COCs) are:

1904300. One sample was placed on hold and not analyzed.

Soil Results

The data are acceptable for use with one qualification.

Gasoline-Range TPH by NWTPH-Gx

Holding times and reporting limits were acceptable. No method blank contamination was detected. Surrogate recoveries were within laboratory control limits. SB/SBD recoveries and associated RPDs were within laboratory control limits. The laboratory duplicate RPDs were not applicable because the sample and/or duplicate were below RLs.

The data are acceptable for use without qualification.

VOCs by EPA Method 8260C

Holding times and reporting limits were acceptable. No method blank contamination was detected. Surrogate recoveries were within laboratory control limits. SB/SBD recoveries and associated RPDs were within laboratory control limits.

Sample P-8 11-13 had elevated PQL level due to interference present in the sample. The data was qualified as U.

Volatile Petroleum Hydrocarbons

Holding times and reporting limits were acceptable. No method blank contamination was detected. Surrogate and SB recoveries were within laboratory control limits. MS/MSD recoveries and associated RPDs were within laboratory control limits.

The data are acceptable for use without qualification.

Percent Moisture

Holding times and reporting limits were acceptable.

The data are acceptable for use without qualification.

Soil Vapor Results

Helium by GC/TCD

Holding times and reporting limits were acceptable. No method blank contamination was detected. Surrogate and SB recoveries were within laboratory control limits. The laboratory duplicate RPDs were either within laboratory control limits or not applicable because the sample and/or duplicate were below RLs. The field duplicate RPDs were not applicable because the sample and/or duplicate were below RLs.

The samples were diluted and flagged by the lab with D. The D qualifier was removed.

TO-15 petroleum fractionation

Holding times and reporting limits were acceptable. No method blank contamination was detected. Surrogate recoveries were within laboratory control limits. The laboratory duplicate RPDs were not applicable because the sample and/or duplicate were below RLs. The field duplicate RPDs were not applicable because the sample and/or duplicate were below RLs.

The results for sample P-7—aliphatic hydrocarbons (EC5-8 and EC9-12)—were qualified by the lab with E due to calibration of instrument. Qualifier changed from E to J.

TO-15 (SIM) naphthalene

Holding times and reporting limits were acceptable. No method blank contamination was detected. Surrogate recoveries were within laboratory control limits. SB/SBD recoveries and associated RPDs were within laboratory control limits. The field duplicate RPDs were not applicable because the sample and/or duplicate were below RLs.

The data are acceptable for use without qualification.

Laboratory Reports

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

Hart Crowser, Inc.
Jamalyn Green
3131 Elliott Avenue, Suite 600
Seattle, WA 98121

RE: Ken's Auto
Work Order Number: 1903110

March 18, 2019

Attention Jamalyn Green:

Fremont Analytical, Inc. received 5 sample(s) on 3/8/2019 for the analyses presented in the following report.

Helium by GC/TCD
Petroleum Fractionation by EPA Method TO-15
Volatile Organic Compounds-EPA Method TO-15 (SIM)

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

Date: *03/18/2019*

CLIENT: Hart Crowser, Inc.
Project: Ken's Auto
Work Order: 1903110

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1903110-001	P-2	03/08/2019 11:10 AM	03/08/2019 4:50 PM
1903110-002	P-3	03/08/2019 11:55 AM	03/08/2019 4:50 PM
1903110-003	P-4	03/08/2019 11:30 AM	03/08/2019 4:50 PM
1903110-004	P-1	03/08/2019 9:40 AM	03/08/2019 4:50 PM
1903110-005	P-7	03/07/2019 3:31 PM	03/08/2019 4:50 PM

Case Narrative

WO#: **1903110**
Date: **3/18/2019**

CLIENT: Hart Crowser, Inc.
Project: Ken's Auto

WorkOrder Narrative:
I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Air samples are reported in ppbv and ug/m3.

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Standard temperature and pressure assumes 24.45 = (25C and 1 atm).

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

CLIENT: Hart Crowser, Inc.
Project: Ken's Auto

Lab ID: 1903110-001 **Collection Date:** 3/8/2019 11:10:00 AM
Client Sample ID: **P-2** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Helium by GC/TCD				Batch ID: R50114		Analyst: AD
Helium	ND	180	D	ppt	1.8	3/18/2019 12:48:00 PM

Lab ID: 1903110-002 **Collection Date:** 3/8/2019 11:55:00 AM
Client Sample ID: **P-3** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Helium by GC/TCD				Batch ID: R50114		Analyst: AD
Helium	ND	163	D	ppt	1.63	3/18/2019 12:55:00 PM

Lab ID: 1903110-003 **Collection Date:** 3/8/2019 11:30:00 AM
Client Sample ID: **P-4** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Helium by GC/TCD				Batch ID: R50114		Analyst: AD
Helium	ND	172	D	ppt	1.72	3/18/2019 1:04:00 PM

Analytical Report

Work Order: **1903110**
Date Reported: **3/18/2019**

CLIENT: Hart Crowser, Inc.
Project: Ken's Auto

Lab ID: 1903110-004 **Collection Date:** 3/8/2019 9:40:00 AM
Client Sample ID: **P-1** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Helium by GC/TCD				Batch ID: R50114		Analyst: AD
Helium	ND	157	D	ppt	1.57	3/18/2019 1:14:00 PM

Lab ID: 1903110-005 **Collection Date:** 3/7/2019 3:31:00 PM
Client Sample ID: **P-7** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Helium by GC/TCD				Batch ID: R50114		Analyst: AD
Helium	ND	156	D	ppt	1.56	3/18/2019 2:22:00 PM

Client: **Hart Crowser, Inc.**
WorkOrder: 1903110
Project: Ken's Auto

Client Sample ID: P-2
Lab ID: 1903110-001A
Sample Type: Summa Canister

Date Sampled: 3/8/2019
Date Received: 3/8/2019

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Petroleum Fractionation by EPA Method TO-15								
	(ppbv)	**(ug/m³)**	**(ppbv)**	**(ug/m³)**				
Aliphatic Hydrocarbon (EC5-8)	51.9	197	7.50	28.5		EPA-TO-15	03/16/2019	AD
Aliphatic Hydrocarbon (EC9-12)	28.9	170	7.50	44.2		EPA-TO-15	03/16/2019	AD
Aromatic Hydrocarbon (EC9-10)	<6.25	<31.4	6.25	31.4		EPA-TO-15	03/16/2019	AD
Benzene	0.608	1.94	0.391	1.25		EPA-TO-15	03/16/2019	AD
Ethylbenzene	<0.338	<1.47	0.338	1.47		EPA-TO-15	03/16/2019	AD
m,p-Xylene	1.27	5.50	0.901	3.91		EPA-TO-15	03/16/2019	AD
o-Xylene	0.390	1.69	0.332	1.44		EPA-TO-15	03/16/2019	AD
Toluene	2.21	8.31	0.373	1.41		EPA-TO-15	03/16/2019	AD
Surr: 4-Bromofluorobenzene	92.8 %Rec	--	70-130	--		EPA-TO-15	03/16/2019	AD
Volatile Organic Compounds-EPA Method TO-15 (SIM)								
	(ppbv)	**(ug/m³)**	**(ppbv)**	**(ug/m³)**				
Naphthalene	<0.0571	<0.299	0.0571	0.299	MDL	EPA-TO-15SIM	03/12/2019	AD
Surr: 4-Bromofluorobenzene	102 %Rec	--	70-130	--		EPA-TO-15SIM	03/12/2019	AD

NOTES:
MDL - Analyte reported to Method Detection Limit (MDL)

Client: **Hart Crowser, Inc.**
WorkOrder: 1903110
Project: Ken's Auto

Client Sample ID: P-3
Lab ID: 1903110-002A
Sample Type: Summa Canister

Date Sampled: 3/8/2019
Date Received: 3/8/2019

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Petroleum Fractionation by EPA Method TO-15								
	(ppbv)	**(ug/m³)**	**(ppbv)**	**(ug/m³)**				
Aliphatic Hydrocarbon (EC5-8)	625	2,380	75.0	285		EPA-TO-15	03/16/2019	AD
Aliphatic Hydrocarbon (EC9-12)	68.4	403	7.50	44.2		EPA-TO-15	03/16/2019	AD
Aromatic Hydrocarbon (EC9-10)	<6.25	<31.4	6.25	31.4		EPA-TO-15	03/16/2019	AD
Benzene	0.734	2.35	0.391	1.25		EPA-TO-15	03/16/2019	AD
Ethylbenzene	1.57	6.81	0.338	1.47		EPA-TO-15	03/16/2019	AD
m,p-Xylene	12.4	54.0	0.901	3.91		EPA-TO-15	03/16/2019	AD
o-Xylene	4.39	19.1	0.332	1.44		EPA-TO-15	03/16/2019	AD
Toluene	33.7	127	3.73	14.1		EPA-TO-15	03/16/2019	AD
Surr: 4-Bromofluorobenzene	98.2 %Rec	--	70-130	--		EPA-TO-15	03/16/2019	AD
Volatile Organic Compounds-EPA Method TO-15 (SIM)								
	(ppbv)	**(ug/m³)**	**(ppbv)**	**(ug/m³)**				
Naphthalene	0.0576	0.302	0.0571	0.299	MDL	EPA-TO-15SIM	03/12/2019	AD
Surr: 4-Bromofluorobenzene	101 %Rec	--	70-130	--		EPA-TO-15SIM	03/12/2019	AD

NOTES:
MDL - Analyte reported to Method Detection Limit (MDL)

Client: **Hart Crowser, Inc.**
WorkOrder: 1903110
Project: Ken's Auto

Client Sample ID: P-4
Lab ID: 1903110-003A
Sample Type: Summa Canister

Date Sampled: 3/8/2019
Date Received: 3/8/2019

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Petroleum Fractionation by EPA Method TO-15	**(ppbv)**	**(ug/m³)**	**(ppbv)**	**(ug/m³)**				
Aliphatic Hydrocarbon (EC5-8)	442	1,680	75.0	285		EPA-TO-15	03/16/2019	AD
Aliphatic Hydrocarbon (EC9-12)	89.3	526	7.50	44.2		EPA-TO-15	03/16/2019	AD
Aromatic Hydrocarbon (EC9-10)	<6.25	<31.4	6.25	31.4		EPA-TO-15	03/16/2019	AD
Benzene	<0.391	<1.25	0.391	1.25		EPA-TO-15	03/16/2019	AD
Ethylbenzene	<0.338	<1.47	0.338	1.47		EPA-TO-15	03/16/2019	AD
m,p-Xylene	1.05	4.57	0.901	3.91		EPA-TO-15	03/16/2019	AD
o-Xylene	<0.332	<1.44	0.332	1.44		EPA-TO-15	03/16/2019	AD
Toluene	1.67	6.30	0.373	1.41		EPA-TO-15	03/16/2019	AD
Surr: 4-Bromofluorobenzene	91.0 %Rec	--	70-130	--		EPA-TO-15	03/16/2019	AD
Volatile Organic Compounds-EPA Method TO-15 (SIM)	**(ppbv)**	**(ug/m³)**	**(ppbv)**	**(ug/m³)**				
Naphthalene	<0.0571	<0.299	0.0571	0.299	MDL	EPA-TO-15SIM	03/12/2019	AD
Surr: 4-Bromofluorobenzene	99.0 %Rec	--	70-130	--		EPA-TO-15SIM	03/12/2019	AD

NOTES:
MDL - Analyte reported to Method Detection Limit (MDL)

Client: **Hart Crowser, Inc.**
WorkOrder: 1903110
Project: Ken's Auto

Client Sample ID: P-1
Lab ID: 1903110-004A
Sample Type: Summa Canister

Date Sampled: 3/8/2019
Date Received: 3/8/2019

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Petroleum Fractionation by EPA Method TO-15	**(ppbv)**	**(ug/m³)**	**(ppbv)**	**(ug/m³)**				
Aliphatic Hydrocarbon (EC5-8)	341	1,300	75.0	285		EPA-TO-15	03/16/2019	AD
Aliphatic Hydrocarbon (EC9-12)	233	1,370	75.0	442		EPA-TO-15	03/16/2019	AD
Aromatic Hydrocarbon (EC9-10)	<6.25	<31.4	6.25	31.4		EPA-TO-15	03/16/2019	AD
Benzene	0.709	2.26	0.391	1.25		EPA-TO-15	03/16/2019	AD
Ethylbenzene	3.93	17.1	0.338	1.47		EPA-TO-15	03/16/2019	AD
m,p-Xylene	18.6	80.8	0.901	3.91		EPA-TO-15	03/16/2019	AD
o-Xylene	2.69	11.7	0.332	1.44		EPA-TO-15	03/16/2019	AD
Toluene	14.8	55.9	0.373	1.41		EPA-TO-15	03/16/2019	AD
Surr: 4-Bromofluorobenzene	98.4 %Rec	--	70-130	--		EPA-TO-15	03/16/2019	AD
Volatile Organic Compounds-EPA Method TO-15 (SIM)	**(ppbv)**	**(ug/m³)**	**(ppbv)**	**(ug/m³)**				
Naphthalene	<0.0571	<0.299	0.0571	0.299	MDL	EPA-TO-15SIM	03/12/2019	AD
Surr: 4-Bromofluorobenzene	96.5 %Rec	--	70-130	--		EPA-TO-15SIM	03/12/2019	AD

NOTES:
MDL - Analyte reported to Method Detection Limit (MDL)

Client: **Hart Crowser, Inc.**
WorkOrder: 1903110
Project: Ken's Auto

Client Sample ID: P-7
Lab ID: 1903110-005A
Sample Type: Summa Canister

Date Sampled: 3/7/2019
Date Received: 3/8/2019

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Petroleum Fractionation by EPA Method TO-15	**(ppbv)**	**(ug/m³)**	**(ppbv)**	**(ug/m³)**				
Aliphatic Hydrocarbon (EC5-8)	2,370	9,010	75.0	285	E	EPA-TO-15	03/16/2019	AD
Aliphatic Hydrocarbon (EC9-12)	442	2,600	75.0	442	E	EPA-TO-15	03/16/2019	AD
Aromatic Hydrocarbon (EC9-10)	<6.25	<31.4	6.25	31.4		EPA-TO-15	03/16/2019	AD
Benzene	2.10	6.71	0.391	1.25		EPA-TO-15	03/16/2019	AD
Ethylbenzene	<0.338	<1.47	0.338	1.47		EPA-TO-15	03/16/2019	AD
m,p-Xylene	1.36	5.89	0.901	3.91		EPA-TO-15	03/16/2019	AD
o-Xylene	0.389	1.69	0.332	1.44		EPA-TO-15	03/16/2019	AD
Toluene	2.75	10.4	0.373	1.41		EPA-TO-15	03/16/2019	AD
Surr: 4-Bromofluorobenzene	101 %Rec	--	70-130	--		EPA-TO-15	03/16/2019	AD

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.

Volatile Organic Compounds-EPA Method TO-15 (SIM)	**(ppbv)**	**(ug/m³)**	**(ppbv)**	**(ug/m³)**				
Naphthalene	<0.0571	<0.299	0.0571	0.299	MDL	EPA-TO-15SIM	03/12/2019	AD
Surr: 4-Bromofluorobenzene	100 %Rec	--	70-130	--		EPA-TO-15SIM	03/12/2019	AD

NOTES:
MDL - Analyte reported to Method Detection Limit (MDL)

Work Order: 1903110
CLIENT: Hart Crowser, Inc.
Project: Ken's Auto

QC SUMMARY REPORT

Petroleum Fractionation by EPA Method TO-15

Sample ID **LCS-R50101** SampType: **LCS** Units: **ppbv** Prep Date: **3/16/2019** RunNo: **50101**
Client ID: **LCSW** Batch ID: **R50101** Analysis Date: **3/16/2019** SeqNo: **983494**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (EC5-8)	11.3	7.50	12.00	0	94.4	70	130				
Aliphatic Hydrocarbon (EC9-12)	11.1	7.50	12.00	0	92.4	70	130				
Aromatic Hydrocarbon (EC9-10)	8.69	6.25	10.00	0	86.9	70	130				
Benzene	1.95	0.391	2.000	0	97.6	70	130				
Ethylbenzene	1.86	0.338	2.000	0	93.1	70	130				
m,p-Xylene	3.25	0.901	4.000	0	81.3	70	130				
o-Xylene	1.82	0.332	2.000	0	90.9	70	130				
Toluene	1.93	0.373	2.000	0	96.3	70	130				
Surr: 4-Bromofluorobenzene	4.02		4.000		101	70	130				

Sample ID **MB-R50101** SampType: **MBLK** Units: **ppbv** Prep Date: **3/16/2019** RunNo: **50101**
Client ID: **MBLKW** Batch ID: **R50101** Analysis Date: **3/16/2019** SeqNo: **983495**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (EC5-8)	ND	7.50									
Aliphatic Hydrocarbon (EC9-12)	ND	7.50									
Aromatic Hydrocarbon (EC9-10)	ND	6.25									
Benzene	ND	0.391									
Ethylbenzene	ND	0.338									
m,p-Xylene	ND	0.901									
o-Xylene	ND	0.332									
Toluene	ND	0.373									
Surr: 4-Bromofluorobenzene	3.44		4.000		85.9	70	130				

Sample ID **1903121-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/16/2019** RunNo: **50101**
Client ID: **BATCH** Batch ID: **R50101** Analysis Date: **3/16/2019** SeqNo: **983497**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (EC5-8)	22.1	7.50						19.39	12.9	30	
Aliphatic Hydrocarbon (EC9-12)	ND	7.50						0		30	

Work Order: 1903110
CLIENT: Hart Crowser, Inc.
Project: Ken's Auto

QC SUMMARY REPORT

Petroleum Fractionation by EPA Method TO-15

Sample ID **1903121-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/16/2019** RunNo: **50101**
Client ID: **BATCH** Batch ID: **R50101** Analysis Date: **3/16/2019** SeqNo: **983497**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (EC9-10)	ND	6.25						0		30	
Benzene	ND	0.391						0		30	
Ethylbenzene	ND	0.338						0		30	
m,p-Xylene	ND	0.901						0		30	
o-Xylene	ND	0.332						0		30	
Toluene	0.590	0.373						0.6028	2.07	30	
Surr: 4-Bromofluorobenzene	3.56		4.000		88.9	70	130		0		

Work Order: 1903110
CLIENT: Hart Crowser, Inc.
Project: Ken's Auto

QC SUMMARY REPORT

Helium by GC/TCD

Sample ID	LCS-R50114A	SampType:	LCS			Units:	ppt			Prep Date:	3/18/2019			RunNo:	50114	
Client ID:	LCSW	Batch ID:	R50114							Analysis Date:	3/18/2019			SeqNo:	983883	
Analyte		Result		RL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit		Qual
Helium		115		100	100.0	0		115	80	120						

Sample ID	MB-R50114A	SampType:	MBLK			Units:	ppt			Prep Date:	3/18/2019			RunNo:	50114	
Client ID:	MBLKW	Batch ID:	R50114							Analysis Date:	3/18/2019			SeqNo:	983886	
Analyte		Result		RL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit		Qual
Helium		ND		100												

Sample ID	1903110-001AREP	SampType:	REP			Units:	ppt			Prep Date:	3/18/2019			RunNo:	50114	
Client ID:	P-2	Batch ID:	R50114							Analysis Date:	3/18/2019			SeqNo:	983878	
Analyte		Result		RL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit		Qual
Helium		ND		180							0			30		D

Work Order: 1903110
CLIENT: Hart Crowser, Inc.
Project: Ken's Auto

QC SUMMARY REPORT

Volatile Organic Compounds-EPA Method TO-15 (SIM)

Sample ID **LCS-R49999** SampType: **LCS** Units: **ppbv** Prep Date: **3/12/2019** RunNo: **49999**
Client ID: **LCSW** Batch ID: **R49999** Analysis Date: **3/12/2019** SeqNo: **981177**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1.57	0.300	2.000	0	78.5	70	130				
Surr: 4-Bromofluorobenzene	3.97		4.000		99.3	70	130				

Sample ID **MB-R49999** SampType: **MBLK** Units: Prep Date: **3/12/2019** RunNo: **49999**
Client ID: **MBLKW** Batch ID: **R49999** Analysis Date: **3/12/2019** SeqNo: **981178**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	0.0571									MDL
Surr: 4-Bromofluorobenzene	3.42		4.000		85.6	70	130				

NOTES:
MDL - Analyte reported to Method Detection Limit (MDL)

Sample ID **1903110-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/12/2019** RunNo: **49999**
Client ID: **P-2** Batch ID: **R49999** Analysis Date: **3/12/2019** SeqNo: **981180**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	0.0571						0		30	MDL
Surr: 4-Bromofluorobenzene	4.14		4.000		103	70	130		0		

NOTES:
MDL - Analyte reported to Method Detection Limit (MDL)

Sample Log-In Check List

Client Name:	**HART**	Work Order Number:	**1903110**
Logged by:	**Brianna Barnes**	Date Received:	**3/8/2019 4:50:00 PM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☑	No	☐	NA ☐

Person Notified:	Jamalyn Green	Date	3/11/2019
By Whom:	Brianna Barnes	Via:	☑ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:	Confirming method (SIM vs Scan).		
Client Instructions:	Report BTEX under APH analysis, report Naphthalene under TO15-SIM.		

19. Additional remarks:

Item Information

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Air Chain of Custody Record & Laboratory Services Agreement

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

Date: 3/8/19 Page: 1 of: 1

Project Name: KEN'S AUTO

Project No: 7168-10

Location: ELLENSBURG, WA

Collected by: WM / VK

Reports to (PM): JAMALYN GREEN

Email (PM): JAMALYN.GREEN@HARTCROWSER.COM

Laboratory Project No (Internal): 1903110

Special Remarks: Requested Analysis:
*BTEX and naphthalene by Method TO15 SIM
*APH by Method TO15
*Helium

Air samples are disposed of one week after report is submitted to client unless otherwise requested. ☒ OK to Dispose ☐ Hold (fees may apply)

Client: HC

Address: 3131 ELLIOTT AVE

City, State, Zip: SEATTLE, WA

Telephone: 206.324.9530

Fax:

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Internal: Initial Evacuation Pressure (mtorr)	Field Initial Sample Pressure (" Hg)	Field Final Sample Pressure (" Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN LL	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15	Sulfur Ext. TO15	APH TO15	Helium	Major Gases 3C	Comments	Internal: Final Pressure ("Hg)
1	P-2	3487 Canister / 1110 Flow Reg	3/8/19 Date / Time	AIR	1L	120mL /min	10mtorr Pressure / 3/5/2019 Date	26.5 Pressure / 3/8/19 Date	>2 Pressure / — Date			X				X	X			-4
2	P-3	4687 Canister / 1155 Flow Reg	3/8/19 Date / Time		1L	120mL /min	10mtorr Pressure / 3/5/2019 Date	+30 Pressure / 3/8/19 Date	5 Pressure / — Date			X				X	X			-6
3	P-4	4902 Canister / 1130 Flow Reg	3/8/19 Date / Time		1L	120mL /min	10mtorr Pressure / 3/5/2019 Date	26 Pressure / 3/8/19 Date	4 Pressure / — Date			X				X	X			-5
4	P-1	4686 Canister / 0940 Flow Reg	3/8/19 Date / Time		1L	120mL /min	10mtorr Pressure / 3/5/2019 Date	30 Pressure / 3/8/19 Date	4 Pressure / 3/8/19 Date			X				X	X			-5
5	P-7	4683 Canister / 1531 Flow Reg	3/7/19 Date / Time	AIR	1L 1.4L	120mL /min	10mtorr Pressure / 3/5/2019 Date	+30 Pressure / 3/7/19 Date	4 Pressure / 3/7/19 Date			X				X	X			-5

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x	3/8/19 1200	x	3/8/19 12:43
x Vaishnavi	3/8/19 4:49pm	x	3/8/19 1650

Turn-Around Time:
☒ Standard
☐ 3 Day
☐ 2 Day
☐ Next Day
☐ Same Day (specify)

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

May 3, 2019

Angie Goodwin
Hart Crowser, Inc.
3131 Elliott Ave., Suite 600
Seattle, WA 98121

Re: Analytical Data for Project 7168-10
Laboratory Reference No. 1904-300

Dear Angie:

Enclosed are the analytical results and associated quality control data for samples submitted on April 25, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

Case Narrative

Samples were collected on April 24, 2019 and received by the laboratory on April 25, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Volatiles EPA 8260C Analysis

Some MTCA Method A cleanup levels are non-achievable for samples P-10 8-10, P-10 10-12, P-11 8-10, P-5 8-10 and P-5 10-12 due to the necessary dilution of the samples.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-7 8-10**					
Laboratory ID:	04-300-01					
Gasoline	**72**	5.3	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*57-129*				
Client ID:	**P-7 10-12**					
Laboratory ID:	04-300-02					
Gasoline	**9.9**	4.6	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*57-129*				
Client ID:	**P-7 13-15**					
Laboratory ID:	04-300-03					
Gasoline	**ND**	7.9	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*57-129*				
Client ID:	**P-8 8-10**					
Laboratory ID:	04-300-04					
Gasoline	**250**	14	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*57-129*				
Client ID:	**P-8 11-13**					
Laboratory ID:	04-300-05					
Gasoline	**440**	10	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*57-129*				
Client ID:	**P-8 13-15**					
Laboratory ID:	04-300-06					
Gasoline	**ND**	5.8	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*57-129*				

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GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-9 7-9**					
Laboratory ID:	04-300-07					
Gasoline	**220**	4.8	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*57-129*				
Client ID:	**P-9 10-12**					
Laboratory ID:	04-300-08					
Gasoline	**19**	5.6	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*57-129*				
Client ID:	**P-9 13-15**					
Laboratory ID:	04-300-09					
Gasoline	**ND**	12	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*57-129*				
Client ID:	**P-3 6-8**					
Laboratory ID:	04-300-10					
Gasoline	**340**	12	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*81*	*57-129*				
Client ID:	**P-3 11-13**					
Laboratory ID:	04-300-11					
Gasoline	**8.4**	5.6	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*57-129*				
Client ID:	**P-3 13-15**					
Laboratory ID:	04-300-12					
Gasoline	**ND**	5.9	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*57-129*				
Client ID:	**P-1 7-9**					
Laboratory ID:	04-300-13					
Gasoline	**ND**	6.5	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*57-129*				

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GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-1 11-13**					
Laboratory ID:	04-300-14					
Gasoline	**ND**	6.1	NWTPH-Gx	4-30-19	5-2-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*57-129*				
Client ID:	**P-10 8-10**					
Laboratory ID:	04-300-15					
Gasoline	**760**	64	NWTPH-Gx	4-30-19	5-2-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*57-129*				
Client ID:	**P-10 10-12**					
Laboratory ID:	04-300-16					
Gasoline	**230**	7.0	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*82*	*57-129*				
Client ID:	**P-10 12-14**					
Laboratory ID:	04-300-17					
Gasoline	**9.2**	6.0	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*57-129*				
Client ID:	**P-11 6-8**					
Laboratory ID:	04-300-18					
Gasoline	**ND**	7.8	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*57-129*				
Client ID:	**P-11 8-10**					
Laboratory ID:	04-300-19					
Gasoline	**980**	10	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*71*	*57-129*				
Client ID:	**P-11 13-15**					
Laboratory ID:	04-300-20					
Gasoline	**ND**	7.2	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*57-129*				

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GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-4 6-8**					
Laboratory ID:	04-300-21					
Gasoline	**ND**	6.3	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*57-129*				
Client ID:	**P-4 13-15**					
Laboratory ID:	04-300-22					
Gasoline	**ND**	6.3	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*57-129*				
Client ID:	**P-5 8-10**					
Laboratory ID:	04-300-23					
Gasoline	**1300**	56	NWTPH-Gx	4-30-19	5-2-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*75*	*57-129*				
Client ID:	**P-5 10-12**					
Laboratory ID:	04-300-24					
Gasoline	**840**	14	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*76*	*57-129*				
Client ID:	**P-5 13-15**					
Laboratory ID:	04-300-25					
Gasoline	**ND**	6.0	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*57-129*				
Client ID:	**P-6 6-8**					
Laboratory ID:	04-300-26					
Gasoline	**ND**	5.5	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*57-129*				
Client ID:	**P-6 10-12**					
Laboratory ID:	04-300-27					
Gasoline	**ND**	5.8	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*57-129*				

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GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-6 13-15**					
Laboratory ID:	04-300-28					
Gasoline	**ND**	5.9	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*81*	*57-129*				
Client ID:	**P-2 8-10**					
Laboratory ID:	04-300-29					
Gasoline	**ND**	6.2	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*57-129*				
Client ID:	**P-2 10-12**					
Laboratory ID:	04-300-30					
Gasoline	**ND**	6.4	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*57-129*				

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GASOLINE RANGE ORGANICS
NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0430S1					
Gasoline	**ND**	5.0	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*57-129*				
Laboratory ID:	MB0430S2					
Gasoline	**ND**	5.0	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*57-129*				
Laboratory ID:	MB0430S3					
Gasoline	**ND**	5.0	NWTPH-Gx	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*57-129*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-300-01										
	ORIG	DUP									
Gasoline	**67.3**	**70.8**	NA	NA		NA		NA	5	30	
Surrogate:											
Fluorobenzene						*88*	*91*	*57-129*			
Laboratory ID:	04-300-02										
	ORIG	DUP									
Gasoline	**9.08**	**10.6**	NA	NA		NA		NA	15	30	
Surrogate:											
Fluorobenzene						*92*	*93*	*57-129*			
Laboratory ID:	04-300-03										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*100*	*96*	*57-129*			

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-7 8-10**					
Laboratory ID:	04-300-01					
Methyl t-Butyl Ether	ND	0.00096	EPA 8260C	4-29-19	4-29-19	
Benzene	ND	0.00096	EPA 8260C	4-29-19	4-29-19	
Toluene	ND	0.0048	EPA 8260C	4-29-19	4-29-19	
Ethylbenzene	ND	0.00096	EPA 8260C	4-29-19	4-29-19	
m,p-Xylene	ND	0.0019	EPA 8260C	4-29-19	4-29-19	
o-Xylene	ND	0.00096	EPA 8260C	4-29-19	4-29-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*68-139*				
Toluene-d8	*99*	*79-128*				
4-Bromofluorobenzene	*97*	*71-132*				

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-7 10-12**					
Laboratory ID:	04-300-02					
Methyl t-Butyl Ether	ND	0.00090	EPA 8260C	4-29-19	4-29-19	
Benzene	ND	0.00090	EPA 8260C	4-29-19	4-29-19	
Toluene	ND	0.0045	EPA 8260C	4-29-19	4-29-19	
Ethylbenzene	ND	0.00090	EPA 8260C	4-29-19	4-29-19	
m,p-Xylene	ND	0.0018	EPA 8260C	4-29-19	4-29-19	
o-Xylene	ND	0.00090	EPA 8260C	4-29-19	4-29-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*68-139*				
Toluene-d8	*96*	*79-128*				
4-Bromofluorobenzene	*95*	*71-132*				

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-7 13-15**					
Laboratory ID:	04-300-03					
Methyl t-Butyl Ether	ND	0.0012	EPA 8260C	4-29-19	4-29-19	
Benzene	ND	0.0012	EPA 8260C	4-29-19	4-29-19	
Toluene	ND	0.0059	EPA 8260C	4-29-19	4-29-19	
Ethylbenzene	ND	0.0012	EPA 8260C	4-29-19	4-29-19	
m,p-Xylene	ND	0.0024	EPA 8260C	4-29-19	4-29-19	
o-Xylene	ND	0.0012	EPA 8260C	4-29-19	4-29-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*110*	*68-139*				
Toluene-d8	*105*	*79-128*				
4-Bromofluorobenzene	*103*	*71-132*				

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-8 8-10**					
Laboratory ID:	04-300-04					
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	4-29-19	4-29-19	
Benzene	ND	0.0010	EPA 8260C	4-29-19	4-29-19	
Toluene	ND	0.0051	EPA 8260C	4-29-19	4-29-19	
Ethylbenzene	ND	0.0010	EPA 8260C	4-29-19	4-29-19	
m,p-Xylene	ND	0.0020	EPA 8260C	4-29-19	4-29-19	
o-Xylene	ND	0.0010	EPA 8260C	4-29-19	4-29-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*112*	*68-139*				
Toluene-d8	*97*	*79-128*				
4-Bromofluorobenzene	*115*	*71-132*				

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-8 11-13**					
Laboratory ID:	04-300-05					
Methyl t-Butyl Ether	ND	0.00083	EPA 8260C	4-29-19	4-29-19	
Benzene	ND	0.00083	EPA 8260C	4-29-19	4-29-19	
Toluene	ND	0.0042	EPA 8260C	4-29-19	4-29-19	
Ethylbenzene	ND	0.00083	EPA 8260C	4-29-19	4-29-19	
m,p-Xylene	ND	0.0042	EPA 8260C	4-29-19	4-29-19	U1
o-Xylene	ND	0.00083	EPA 8260C	4-29-19	4-29-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*119*	*68-139*				
Toluene-d8	*89*	*79-128*				
4-Bromofluorobenzene	*130*	*71-132*				

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-8 13-15**					
Laboratory ID:	04-300-06					
Methyl t-Butyl Ether	ND	0.00098	EPA 8260C	4-29-19	4-29-19	
Benzene	ND	0.00098	EPA 8260C	4-29-19	4-29-19	
Toluene	ND	0.0049	EPA 8260C	4-29-19	4-29-19	
Ethylbenzene	ND	0.00098	EPA 8260C	4-29-19	4-29-19	
m,p-Xylene	ND	0.0020	EPA 8260C	4-29-19	4-29-19	
o-Xylene	ND	0.00098	EPA 8260C	4-29-19	4-29-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*68-139*				
Toluene-d8	*105*	*79-128*				
4-Bromofluorobenzene	*102*	*71-132*				

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-9 7-9**					
Laboratory ID:	04-300-07					
Methyl t-Butyl Ether	ND	0.0011	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.0011	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0056	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.0011	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0023	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.0011	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*106*	*68-139*				
Toluene-d8	*87*	*79-128*				
4-Bromofluorobenzene	*119*	*71-132*				

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-9 10-12**					
Laboratory ID:	04-300-08					
Methyl t-Butyl Ether	ND	0.00088	EPA 8260C	4-29-19	4-29-19	
Benzene	ND	0.00088	EPA 8260C	4-29-19	4-29-19	
Toluene	ND	0.0044	EPA 8260C	4-29-19	4-29-19	
Ethylbenzene	ND	0.00088	EPA 8260C	4-29-19	4-29-19	
m,p-Xylene	ND	0.0018	EPA 8260C	4-29-19	4-29-19	
o-Xylene	ND	0.00088	EPA 8260C	4-29-19	4-29-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*105*	*68-139*				
Toluene-d8	*94*	*79-128*				
4-Bromofluorobenzene	*82*	*71-132*				

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-9 13-15**					
Laboratory ID:	04-300-09					
Methyl t-Butyl Ether	ND	0.00099	EPA 8260C	4-29-19	4-29-19	
Benzene	ND	0.00099	EPA 8260C	4-29-19	4-29-19	
Toluene	ND	0.0049	EPA 8260C	4-29-19	4-29-19	
Ethylbenzene	ND	0.00099	EPA 8260C	4-29-19	4-29-19	
m,p-Xylene	ND	0.0020	EPA 8260C	4-29-19	4-29-19	
o-Xylene	ND	0.00099	EPA 8260C	4-29-19	4-29-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*68-139*				
Toluene-d8	*103*	*79-128*				
4-Bromofluorobenzene	*102*	*71-132*				

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-3 6-8**					
Laboratory ID:	04-300-10					
Methyl t-Butyl Ether	ND	0.00088	EPA 8260C	4-29-19	4-29-19	
Benzene	ND	0.00088	EPA 8260C	4-29-19	4-29-19	
Toluene	ND	0.0044	EPA 8260C	4-29-19	4-29-19	
Ethylbenzene	ND	0.053	EPA 8260C	5-1-19	5-1-19	
m,p-Xylene	ND	0.11	EPA 8260C	5-1-19	5-1-19	
o-Xylene	ND	0.053	EPA 8260C	5-1-19	5-1-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*121*	*68-139*				
Toluene-d8	*97*	*79-128*				
4-Bromofluorobenzene	*121*	*71-132*				

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-3 11-13**					
Laboratory ID:	04-300-11					
Methyl t-Butyl Ether	ND	0.00092	EPA 8260C	4-29-19	4-29-19	
Benzene	ND	0.00092	EPA 8260C	4-29-19	4-29-19	
Toluene	ND	0.0046	EPA 8260C	4-29-19	4-29-19	
Ethylbenzene	ND	0.00092	EPA 8260C	4-29-19	4-29-19	
m,p-Xylene	ND	0.0018	EPA 8260C	4-29-19	4-29-19	
o-Xylene	ND	0.00092	EPA 8260C	4-29-19	4-29-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*105*	*68-139*				
Toluene-d8	*97*	*79-128*				
4-Bromofluorobenzene	*90*	*71-132*				

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-3 13-15**					
Laboratory ID:	04-300-12					
Methyl t-Butyl Ether	ND	0.0011	EPA 8260C	4-29-19	4-29-19	
Benzene	ND	0.0011	EPA 8260C	4-29-19	4-29-19	
Toluene	ND	0.0057	EPA 8260C	4-29-19	4-29-19	
Ethylbenzene	ND	0.0011	EPA 8260C	4-29-19	4-29-19	
m,p-Xylene	ND	0.0023	EPA 8260C	4-29-19	4-29-19	
o-Xylene	ND	0.0011	EPA 8260C	4-29-19	4-29-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*68-139*				
Toluene-d8	*96*	*79-128*				
4-Bromofluorobenzene	*98*	*71-132*				

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-1 7-9**					
Laboratory ID:	04-300-13					
Methyl t-Butyl Ether	ND	0.00082	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.00082	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0041	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.00082	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0016	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.00082	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*103*	*68-139*				
Toluene-d8	*93*	*79-128*				
4-Bromofluorobenzene	*88*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-1 11-13**					
Laboratory ID:	04-300-14					
Methyl t-Butyl Ether	ND	0.00081	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.00081	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0040	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.00081	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0016	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.00081	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*104*	*68-139*				
Toluene-d8	*91*	*79-128*				
4-Bromofluorobenzene	*96*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-10 8-10**					
Laboratory ID:	04-300-15					
Methyl t-Butyl Ether	ND	0.066	EPA 8260C	5-1-19	5-1-19	
Benzene	ND	0.066	EPA 8260C	5-1-19	5-1-19	
Toluene	ND	0.33	EPA 8260C	5-1-19	5-1-19	
Ethylbenzene	ND	0.066	EPA 8260C	5-1-19	5-1-19	
m,p-Xylene	ND	0.13	EPA 8260C	5-1-19	5-1-19	
o-Xylene	ND	0.066	EPA 8260C	5-1-19	5-1-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*68-139*				
Toluene-d8	*91*	*79-128*				
4-Bromofluorobenzene	*84*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-10 10-12**					
Laboratory ID:	04-300-16					
Methyl t-Butyl Ether	ND	0.066	EPA 8260C	5-1-19	5-1-19	
Benzene	ND	0.066	EPA 8260C	5-1-19	5-1-19	
Toluene	ND	0.33	EPA 8260C	5-1-19	5-1-19	
Ethylbenzene	ND	0.066	EPA 8260C	5-1-19	5-1-19	
m,p-Xylene	ND	0.13	EPA 8260C	5-1-19	5-1-19	
o-Xylene	ND	0.066	EPA 8260C	5-1-19	5-1-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*106*	*68-139*				
Toluene-d8	*91*	*79-128*				
4-Bromofluorobenzene	*84*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-10 12-14**					
Laboratory ID:	04-300-17					
Methyl t-Butyl Ether	ND	0.00097	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.00097	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0049	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.00097	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0019	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.00097	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*111*	*68-139*				
Toluene-d8	*92*	*79-128*				
4-Bromofluorobenzene	*84*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-11 6-8**					
Laboratory ID:	04-300-18					
Methyl t-Butyl Ether	ND	0.0013	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.0013	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0063	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.0013	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0025	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.0013	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*104*	*68-139*				
Toluene-d8	*93*	*79-128*				
4-Bromofluorobenzene	*89*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
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Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-11 8-10**					
Laboratory ID:	04-300-19					
Methyl t-Butyl Ether	ND	0.049	EPA 8260C	5-1-19	5-1-19	
Benzene	ND	0.049	EPA 8260C	5-1-19	5-1-19	
Toluene	ND	0.24	EPA 8260C	5-1-19	5-1-19	
Ethylbenzene	1.4	0.049	EPA 8260C	5-1-19	5-1-19	
m,p-Xylene	1.3	0.098	EPA 8260C	5-1-19	5-1-19	
o-Xylene	0.056	0.049	EPA 8260C	5-1-19	5-1-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*114*	*68-139*				
Toluene-d8	*94*	*79-128*				
4-Bromofluorobenzene	*87*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-11 13-15**					
Laboratory ID:	04-300-20					
Methyl t-Butyl Ether	ND	0.0012	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.0012	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0059	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.0012	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0024	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.0012	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*109*	*68-139*				
Toluene-d8	*94*	*79-128*				
4-Bromofluorobenzene	*89*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-4 6-8**					
Laboratory ID:	04-300-21					
Methyl t-Butyl Ether	ND	0.0012	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.0012	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0060	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.0012	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0024	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.0012	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*68-139*				
Toluene-d8	*94*	*79-128*				
4-Bromofluorobenzene	*93*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-4 13-15**					
Laboratory ID:	04-300-22					
Methyl t-Butyl Ether	ND	0.00091	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.00091	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0046	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.00091	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0018	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.00091	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*105*	*68-139*				
Toluene-d8	*95*	*79-128*				
4-Bromofluorobenzene	*95*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-5 8-10**					
Laboratory ID:	04-300-23					
Methyl t-Butyl Ether	ND	0.065	EPA 8260C	5-1-19	5-1-19	
Benzene	ND	0.065	EPA 8260C	5-1-19	5-1-19	
Toluene	ND	0.32	EPA 8260C	5-1-19	5-1-19	
Ethylbenzene	3.6	0.065	EPA 8260C	5-1-19	5-1-19	
m,p-Xylene	ND	0.13	EPA 8260C	5-1-19	5-1-19	
o-Xylene	ND	0.065	EPA 8260C	5-1-19	5-1-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*114*	*68-139*				
Toluene-d8	*94*	*79-128*				
4-Bromofluorobenzene	*92*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-5 10-12**					
Laboratory ID:	04-300-24					
Methyl t-Butyl Ether	ND	0.065	EPA 8260C	5-1-19	5-1-19	
Benzene	ND	0.065	EPA 8260C	5-1-19	5-1-19	
Toluene	ND	0.33	EPA 8260C	5-1-19	5-1-19	
Ethylbenzene	0.44	0.065	EPA 8260C	5-1-19	5-1-19	
m,p-Xylene	ND	0.13	EPA 8260C	5-1-19	5-1-19	
o-Xylene	ND	0.065	EPA 8260C	5-1-19	5-1-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*110*	*68-139*				
Toluene-d8	*92*	*79-128*				
4-Bromofluorobenzene	*81*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-5 13-15**					
Laboratory ID:	04-300-25					
Methyl t-Butyl Ether	ND	0.00095	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.00095	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0048	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.00095	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0019	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.00095	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*105*	*68-139*				
Toluene-d8	*96*	*79-128*				
4-Bromofluorobenzene	*94*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-6 6-8**					
Laboratory ID:	04-300-26					
Methyl t-Butyl Ether	ND	0.00090	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.00090	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0045	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.00090	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0018	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.00090	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*106*	*68-139*				
Toluene-d8	*95*	*79-128*				
4-Bromofluorobenzene	*94*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-6 10-12**					
Laboratory ID:	04-300-27					
Methyl t-Butyl Ether	ND	0.00078	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.00078	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0039	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.00078	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0016	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.00078	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*106*	*68-139*				
Toluene-d8	*91*	*79-128*				
4-Bromofluorobenzene	*87*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-6 13-15**					
Laboratory ID:	04-300-28					
Methyl t-Butyl Ether	ND	0.0011	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.0011	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0056	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.0011	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0022	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.0011	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*68-139*				
Toluene-d8	*90*	*79-128*				
4-Bromofluorobenzene	*89*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-2 8-10**					
Laboratory ID:	04-300-29					
Methyl t-Butyl Ether	ND	0.00085	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.00085	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0043	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.00085	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0017	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.00085	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*106*	*68-139*				
Toluene-d8	*92*	*79-128*				
4-Bromofluorobenzene	*87*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-2 10-12**					
Laboratory ID:	04-300-30					
Methyl t-Butyl Ether	ND	0.0012	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.0012	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0060	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.0012	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0024	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.0012	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*103*	*68-139*				
Toluene-d8	*89*	*79-128*				
4-Bromofluorobenzene	*83*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0429S2					
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	4-29-19	4-29-19	
Benzene	ND	0.0010	EPA 8260C	4-29-19	4-29-19	
Toluene	ND	0.0050	EPA 8260C	4-29-19	4-29-19	
Ethylbenzene	ND	0.0010	EPA 8260C	4-29-19	4-29-19	
m,p-Xylene	ND	0.0020	EPA 8260C	4-29-19	4-29-19	
o-Xylene	ND	0.0010	EPA 8260C	4-29-19	4-29-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*109*	*68-139*				
Toluene-d8	*104*	*79-128*				
4-Bromofluorobenzene	*105*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0430S2					
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	4-30-19	4-30-19	
Benzene	ND	0.0010	EPA 8260C	4-30-19	4-30-19	
Toluene	ND	0.0050	EPA 8260C	4-30-19	4-30-19	
Ethylbenzene	ND	0.0010	EPA 8260C	4-30-19	4-30-19	
m,p-Xylene	ND	0.0020	EPA 8260C	4-30-19	4-30-19	
o-Xylene	ND	0.0010	EPA 8260C	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*68-139*				
Toluene-d8	*99*	*79-128*				
4-Bromofluorobenzene	*96*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0501S1					
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	5-1-19	5-1-19	
Benzene	ND	0.0010	EPA 8260C	5-1-19	5-1-19	
Toluene	ND	0.0050	EPA 8260C	5-1-19	5-1-19	
Ethylbenzene	ND	0.0010	EPA 8260C	5-1-19	5-1-19	
m,p-Xylene	ND	0.0020	EPA 8260C	5-1-19	5-1-19	
o-Xylene	ND	0.0010	EPA 8260C	5-1-19	5-1-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*104*	*68-139*				
Toluene-d8	*89*	*79-128*				
4-Bromofluorobenzene	*82*	*71-132*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0429S2									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0409**	**0.0414**	0.0500	0.0500	82	83	53-141	1	17	
Benzene	**0.0521**	**0.0511**	0.0500	0.0500	104	102	70-130	2	15	
Trichloroethene	**0.0470**	**0.0468**	0.0500	0.0500	94	94	74-122	0	16	
Toluene	**0.0514**	**0.0505**	0.0500	0.0500	103	101	76-130	2	15	
Chlorobenzene	**0.0523**	**0.0509**	0.0500	0.0500	105	102	75-120	3	14	
Surrogate:										
Dibromofluoromethane					*109*	*108*	*68-139*			
Toluene-d8					*104*	*105*	*79-128*			
4-Bromofluorobenzene					*102*	*104*	*71-132*			

Date of Report: May 3, 2019
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VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0430S2									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0528**	**0.0523**	0.0500	0.0500	106	105	53-141	1	17	
Benzene	**0.0458**	**0.0451**	0.0500	0.0500	92	90	70-130	2	15	
Trichloroethene	**0.0485**	**0.0495**	0.0500	0.0500	97	99	74-122	2	16	
Toluene	**0.0452**	**0.0455**	0.0500	0.0500	90	91	76-130	1	15	
Chlorobenzene	**0.0510**	**0.0494**	0.0500	0.0500	102	99	75-120	3	14	
Surrogate:										
Dibromofluoromethane					*106*	*103*	*68-139*			
Toluene-d8					*97*	*98*	*79-128*			
4-Bromofluorobenzene					*96*	*94*	*71-132*			

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0501S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0532**	**0.0469**	0.0500	0.0500	106	94	53-141	13	17	
Benzene	**0.0433**	**0.0419**	0.0500	0.0500	87	84	70-130	3	15	
Trichloroethene	**0.0511**	**0.0495**	0.0500	0.0500	102	99	74-122	3	16	
Toluene	**0.0413**	**0.0393**	0.0500	0.0500	83	79	76-130	5	15	
Chlorobenzene	**0.0482**	**0.0467**	0.0500	0.0500	96	93	75-120	3	14	
Surrogate:										
Dibromofluoromethane					*105*	*102*	*68-139*			
Toluene-d8					*90*	*91*	*79-128*			
4-Bromofluorobenzene					*88*	*86*	*71-132*			

Date of Report: May 3, 2019
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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-7 8-10**					
Laboratory ID:	04-300-01					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**21**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**25**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**25**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**71**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**17**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**7.1**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**24**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-7 10-12**					
Laboratory ID:	04-300-02					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**7.5**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**7.5**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-7 13-15**					
Laboratory ID:	04-300-03					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-8 8-10**					
Laboratory ID:	04-300-04					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**14**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**57**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**100**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**170**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**49**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**33**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**16**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**98**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-8 11-13**					
Laboratory ID:	04-300-05					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**150**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**190**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**120**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**460**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**110**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**42**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**21**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**170**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-8 13-15**					
Laboratory ID:	04-300-06					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:						
Laboratory ID:	04-300-07					
Aliphatic C5-C6	**6.3**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C6-C8	**24**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C8-C10	**62**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C10-C12	**82**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aliphatic:	**170**		NWTPH-VPH	4-30-19	5-2-19	
Aromatic C8-C10	**48**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C10-C12	**23**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C12-C13	**10**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aromatic:	**81**		NWTPH-VPH	4-30-19	5-2-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	---	*60-129*				S

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-9 10-12**					
Laboratory ID:	04-300-08					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**6.2**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**8.3**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**15**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-9 13-15**					
Laboratory ID:	04-300-09					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-3 6-8**					
Laboratory ID:	04-300-10					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**140**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**150**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**92**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**380**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**82**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**31**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**18**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**130**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*81*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-3 11-13**					
Laboratory ID:	04-300-11					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-3 13-15**					
Laboratory ID:	04-300-12					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-1 7-9**					
Laboratory ID:	04-300-13					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-1 11-13**					
Laboratory ID:	04-300-14					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	5-2-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	5-2-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-10 8-10**					
Laboratory ID:	04-300-15					
Aliphatic C5-C6	**17**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C6-C8	**190**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C8-C10	**230**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C10-C12	**240**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aliphatic:	**680**		NWTPH-VPH	4-30-19	5-2-19	
Aromatic C8-C10	**160**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C10-C12	**94**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C12-C13	**44**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aromatic:	**300**		NWTPH-VPH	4-30-19	5-2-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	---	*60-129*				S

Date of Report: May 3, 2019
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Project: 7168-10

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-10 10-12**					
Laboratory ID:	04-300-16					
Aliphatic C5-C6	**5.8**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C6-C8	**61**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C8-C10	**81**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C10-C12	**82**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aliphatic:	**230**		NWTPH-VPH	4-30-19	5-2-19	
Aromatic C8-C10	**55**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C10-C12	**29**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C12-C13	**13**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aromatic:	**97**		NWTPH-VPH	4-30-19	5-2-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*60-129*				

Date of Report: May 3, 2019
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Project: 7168-10

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-10 12-14**					
Laboratory ID:	04-300-17					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*60-129*				

Date of Report: May 3, 2019
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Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-11 6-8**					
Laboratory ID:	04-300-18					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*60-129*				

Date of Report: May 3, 2019
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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-11 8-10**					
Laboratory ID:	04-300-19					
Aliphatic C5-C6	**31**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C6-C8	**380**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C8-C10	**150**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C10-C12	**230**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aliphatic:	**790**		NWTPH-VPH	4-30-19	5-2-19	
Aromatic C8-C10	**210**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C10-C12	**120**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C12-C13	**41**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aromatic:	**370**		NWTPH-VPH	4-30-19	5-2-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	---	*60-129*				S

Date of Report: May 3, 2019
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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-11 13-15**					
Laboratory ID:	04-300-20					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*60-129*				

Date of Report: May 3, 2019
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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-4 6-8**					
Laboratory ID:	04-300-21					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-4 13-15**					
Laboratory ID:	04-300-22					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-5 8-10**					
Laboratory ID:	04-300-23					
Aliphatic C5-C6	**17**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C6-C8	**350**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C8-C10	**390**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C10-C12	**410**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aliphatic:	**1200**		NWTPH-VPH	4-30-19	5-2-19	
Aromatic C8-C10	**280**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C10-C12	**200**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C12-C13	**89**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aromatic:	**570**		NWTPH-VPH	4-30-19	5-2-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	---	*60-129*				S

Date of Report: May 3, 2019
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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-5 10-12**					
Laboratory ID:	04-300-24					
Aliphatic C5-C6	**14**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C6-C8	**190**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C8-C10	**180**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aliphatic C10-C12	**180**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aliphatic:	**560**		NWTPH-VPH	4-30-19	5-2-19	
Aromatic C8-C10	**120**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C10-C12	**95**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Aromatic C12-C13	**45**	5.0	NWTPH-VPH	4-30-19	5-2-19	
Total Aromatic:	**260**		NWTPH-VPH	4-30-19	5-2-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	---	*60-129*				S

Date of Report: May 3, 2019
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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-5 13-15**					
Laboratory ID:	04-300-25					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*60-129*				

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Project: 7168-10

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-6 6-8**					
Laboratory ID:	04-300-26					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*60-129*				

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Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-6 10-12**					
Laboratory ID:	04-300-27					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*60-129*				

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Project: 7168-10

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-6 13-15**					
Laboratory ID:	04-300-28					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*81*	*60-129*				

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Samples Submitted: April 25, 2019
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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-2 8-10**					
Laboratory ID:	04-300-29					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-2 10-12**					
Laboratory ID:	04-300-30					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*60-129*				

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VOLATILE PETROLEUM HYDROCARBONS
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0430S1					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*60-129*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE PETROLEUM HYDROCARBONS
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0430S2					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*60-129*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE PETROLEUM HYDROCARBONS
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0430S3					
Aliphatic C5-C6	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C6-C8	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aliphatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aliphatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Aromatic C8-C10	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C10-C12	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Aromatic C12-C13	**ND**	5.0	NWTPH-VPH	4-30-19	4-30-19	
Total Aromatic:	**NA**		NWTPH-VPH	4-30-19	4-30-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*60-129*				

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE PETROLEUM HYDROCARBONS
DUPLICATE QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	04-300-01									
	ORIG	DUP								
Aliphatic C5-C6	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Aliphatic C6-C8	**20.5**	**21.5**	NA	NA		NA	NA	5	30	
Aliphatic C8-C10	**25.3**	**26.7**	NA	NA		NA	NA	5	30	
Aliphatic C10-C12	**24.8**	**27.0**	NA	NA		NA	NA	9	30	
Total Aliphatic:	**70.6**	**75.2**	NA	NA		NA	NA	6	30	
Aromatic C8-C10	**17.4**	**18.2**	NA	NA		NA	NA	5	30	
Aromatic C10-C12	**7.14**	**7.56**	NA	NA		NA	NA	6	30	
Aromatic C12-C13	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Total Aromatic:	**24.5**	**25.8**	NA	NA		NA	NA	5	30	
Surrogate:										
Fluorobenzene						*87* *91*	*60-129*			

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE PETROLEUM HYDROCARBONS
DUPLICATE QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	04-300-02									
	ORIG	DUP								
Aliphatic C5-C6	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Aliphatic C6-C8	**7.48**	**7.82**	NA	NA		NA	NA	4	30	
Aliphatic C8-C10	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Aliphatic C10-C12	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Total Aliphatic:	**7.48**	**7.82**	NA	NA		NA	NA	4	30	
Aromatic C8-C10	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Aromatic C10-C12	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Aromatic C12-C13	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Total Aromatic:	**NA**	**NA**	NA	NA		NA	NA	NA	30	
Surrogate:										
Fluorobenzene						*92* *93*	*60-129*			

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

VOLATILE PETROLEUM HYDROCARBONS
DUPLICATE QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	04-300-03									
	ORIG	DUP								
Aliphatic C5-C6	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Aliphatic C6-C8	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Aliphatic C8-C10	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Aliphatic C10-C12	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Total Aliphatic:	**NA**	**NA**	NA	NA		NA	NA	NA	30	
Aromatic C8-C10	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Aromatic C10-C12	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Aromatic C12-C13	**ND**	**ND**	NA	NA		NA	NA	NA	30	
Total Aromatic:	**NA**	**NA**	NA	NA		NA	NA	NA	30	
Surrogate:										
Fluorobenzene						*100* *97*	*60-129*			

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

% MOISTURE

Date Analyzed: 4-29-19

Client ID	Lab ID	% Moisture
P-7 8-10	04-300-01	6
P-7 10-12	04-300-02	8
P-7 13-15	04-300-03	25
P-8 8-10	04-300-04	16
P-8 11-13	04-300-05	10
P-8 13-15	04-300-06	10
P-9 7-9	04-300-07	9
P-9 10-12	04-300-08	13
P-9 13-15	04-300-09	12
P-3 6-8	04-300-10	10
P-3 11-13	04-300-11	14
P-3 13-15	04-300-12	16
P-1 7-9	04-300-13	20
P-1 11-13	04-300-14	11
P-10 8-10	04-300-15	17
P-10 10-12	04-300-16	22
P-10 12-14	04-300-17	14
P-11 6-8	04-300-18	22
P-11 8-10	04-300-19	9
P-11 13-15	04-300-20	17
P-4 6-8	04-300-21	16
P-4 13-15	04-300-22	17
P-5 8-10	04-300-23	15
P-5 10-12	04-300-24	20
P-5 13-15	04-300-25	19
P-6 6-8	04-300-26	9
P-6 10-12	04-300-27	11

Date of Report: May 3, 2019
Samples Submitted: April 25, 2019
Laboratory Reference: 1904-300
Project: 7168-10

% MOISTURE

Date Analyzed: 4-29-19

Client ID	Lab ID	% Moisture
P-6 13-15	04-300-28	11
P-2 8-10	04-300-29	13
P-2 10-12	04-300-30	25

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Hart Crowser
Project Number: 7168-10
Project Name: Ken's Auto Wash
Project Manager: Angie Goodwin
Sampled by: Samalyn Green

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ _____ (other)

Laboratory Number: 04-300

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX 8260	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	VPH				% Moisture
1	P-7 8-10	4/24/19	0930	SOIL	5		X																X				X
2	P-7 10-12		0940				X																X				X
3	P-7 13-15		0950				X																X				X
4	P-8 8-10		1000				X																X				X
5	P-8 13-13		1010				X																X				X
6	P-8 13-15		1020				X																X				X
7	P-9 7-9		1030				X																X				X
8	P-9 10-12		1040				X																X				X
9	P-9 13-15		1050				X																X				X
10	P-3 6-8		1100				X																X				X

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	Samalyn Green	HC	4/25/19	1100	
Received	Eileen Clark	Alpha	4/25/19	11:10	
Relinquished	Eileen Clark	Alpha	4/25/19	11:20	
Received		OSE	4/25/19	1320	
Relinquished					
Received					Data Package: Standard ☐ Level III ☐ Level IV ☐
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

Chain of Custody

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Company: Hart Crowser
Project Number: 7168-10
Project Name: Ken's Auto Wash
Project Manager: Angie Goodwin
Sampled by: Jamalyn Green

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ _____ (other)

Laboratory Number: 04-300

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX 8260	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	VPH				% Moisture
11	P-3 11-13	4/24/19	1110	SOIL	5		X																X				X
12	P-3 13-15		1120				X																X				X
13	P-1 7-9		1140				X																X				X
14	P-1 11-13		1150				X																X				X
15	P-10 8-10		1215				X																X				X
16	P-10 10-12		1225				X																X				X
17	P-10 12-14		1235				X																X				X
18	P-11 6-8		1315				X																X				X
19	P-11 8-10		1325				X																X				X
20	P-11 13-15		1335				X																X				X

	Signature	Company	Date	Time
Relinquished	Jamalyn Green	HC	4/25/19	1100
Received	Eileen Clark	Alpha	4/25/19	11:20
Relinquished	Eileen Clark	Alpha	4/25/19	1:20
Received		088	4/25/19	1320
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ _____ (other)

Laboratory Number: 04-300

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX 8260	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	VPH				% Moisture
21	P-4 6-8	4/24/19	1350	SOIL	5		X																X				X
22	P-4 13-15	"	1400	"	"		X																X				X
23	P-5 8-10	"	1415	"	"		X																X				X
24	P-5 10-12	"	1425	"	"		X																X				X
25	P-5 13-15	"	1435	"	"		X																X				X
26	P-6 6-8	"	1500	"	"		X																X				X
27	P-6 10-12	"	1510	"	"		X																X				X
28	P-6 13-15	"	1520	"	"		X																X				X
29	P-2 8-10	"	1530	"	"		X																X				X
30	P-2 10-12	"	1540	"	"		X																X				X

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	Jamalyn Green	HC	4/25/19	1100	
Received	Eileen Clark	Alpha	4/25/19	11:20	
Relinquished	Eileen Clark	Alpha	4/25/19	1120	
Received		ORE	4/25/19	1320	
Relinquished					
Received					Data Package: Standard ☐ Level III ☐ Level IV ☐
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

Chain of Custody

Page 4 of 4

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Company: Hart Crowser
Project Number: 7168-10
Project Name: Ken's Auto Wash
Project Manager: Angie Goodwin
Sampled by: Jamalyn Green

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ _____ (other)

Laboratory Number: 04-300

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A		HOLD			% Moisture
31	P-2 13-15	4/24/19	1550	SOIL	5																			X			

	Signature	Company	Date	Time
Relinquished	Jamalyn Green	HC	4/25/19	1100
Received	Eileen Clark	Alpha	4/25/19	11:20
Relinquished	Eileen Clark	Alpha	4/25/19	1:20
Received		CORE	4/25/19	1320
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
Hold P-2 13-15.

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

APPENDIX C
Site-Specific MTCA Method B Cleanup Level Worksheets and Table

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 04/30/19
Site Name: Ken's Auto Wash
Sample Name: P-5 8-10

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	17	0.98%
AL_EC >6-8	350	20.12%
AL_EC >8-10	390	22.42%
AL_EC >10-12	410	23.56%
AL_EC >12-16		0.00%
AL_EC >16-21		0.00%
AL_EC >21-34		0.00%
AR_EC >8-10	280	16.09%
AR_EC >10-12	200	11.49%
AR_EC >12-16	89	5.12%
AR_EC >16-21		0.00%
AR_EC >21-34		0.00%
Benzene	0.0375	0.00%
Toluene	0.16	0.01%
Ethylbenzene	3.6	0.21%
Total Xylenes	0.0975	0.01%
Naphthalene		0.00%
1-Methyl Naphthalene		0.00%
2-Methyl Naphthalene		0.00%
n-Hexane		0.00%
MTBE		0.00%
Ethylene Dibromide (EDB)		0.00%
1,2 Dichloroethane (EDC)		0.00%
Benzo(a)anthracene		0.00%
Benzo(b)fluoranthene		0.00%
Benzo(k)fluoranthene		0.00%
Benzo(a)pyrene		0.00%
Chrysene		0.00%
Dibenz(a,h)anthracene		0.00%
Indeno(1,2,3-cd)pyrene		0.00%
Sum	1739.895	100.00%

Notes for Data Entry | Set Default Hydrogeology

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:
Enter site-specific information here……..

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here: 500 ug/L

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 4/30/2019
Site Name: Ken's Auto Wash
Sample Name: P-5 8-10
Measured Soil TPH Concentration, mg/kg: **1,739.895**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	3,054	2.06E-09	5.70E-01	Pass
	Method C	58,031	2.76E-10	3.00E-02	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	74	2.69E-06	1.67E+00	Fail
	Target TPH GW Conc. @ 500 ug/L	96	NA	NA	Fail

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

Warning! Check Residual Saturation (WAC340-747(10)).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	**3,054.44**	**58,031.40**
Most Stringent Criterion	**HI =1**	**HI =1**

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	YES	3.05E+03	3.62E-09	1.00E+00	YES	5.80E+04	9.22E-09	1.00E+00
Total Risk=1E-5	*NO*	8.43E+06	1.00E-05	2.76E+03	*NO*	6.29E+07	1.00E-05	1.08E+03
Risk of Benzene= 1E-6	*NO*	8.43E+05	1.00E-06	2.76E+02				
Risk of cPAHs mixture= 1E-6	NA	NA	NA	NA		NA		
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**HI=1**
Protective Ground Water Concentration, ug/L	**442.39**
Protective Soil Concentration, mg/kg	**74.05**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	4.42E+02	3.39E-07	1.00E+00	7.41E+01
Total Risk = 1E-5	*NO*	8.31E+02	3.80E-06	1.73E+00	100% NAPL
Total Risk = 1E-6	*NO*	6.77E+02	1.00E-06	1.44E+00	2.65E+02
Risk of cPAHs mixture= 1E-5	NA	NA	NA	NA	NA
Benzene MCL = 5 ug/L	*NO*	8.31E+02	3.80E-06	1.73E+00	100% NAPL
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 67000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 500 ug/L	5.00E+02	4.31E-07	1.11E+00	**9.63E+01**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 04/30/19
Site Name: Ken's Auto Wash
Sample Name: P-8 11-13

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6		0.00%
AL_EC >6-8	150	23.70%
AL_EC >8-10	190	30.02%
AL_EC >10-12	120	18.96%
AL_EC >12-16		0.00%
AL_EC >16-21		0.00%
AL_EC >21-34		0.00%
AR_EC >8-10	110	17.38%
AR_EC >10-12	42	6.64%
AR_EC >12-16	21	3.32%
AR_EC >16-21		0.00%
AR_EC >21-34		0.00%
Benzene	0.000415	0.00%
Toluene	0.0021	0.00%
Ethylbenzene	0.000415	0.00%
Total Xylenes	0.002515	0.00%
Naphthalene		0.00%
1-Methyl Naphthalene		0.00%
2-Methyl Naphthalene		0.00%
n-Hexane		0.00%
MTBE	0	0.00%
Ethylene Dibromide (EDB)		0.00%
1,2 Dichloroethane (EDC)		0.00%
Benzo(a)anthracene		0.00%
Benzo(b)fluoranthene		0.00%
Benzo(k)fluoranthene		0.00%
Benzo(a)pyrene		0.00%
Chrysene		0.00%
Dibenz(a,h)anthracene		0.00%
Indeno(1,2,3-cd)pyrene		0.00%
Sum	633.005445	100.00%

Notes for Data Entry | Set Default Hydrogeology

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:
Enter site-specific information here……..

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	500	ug/L

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 4/30/2019
Site Name: Ken's Auto Wash
Sample Name: P-8 11-13
Measured Soil TPH Concentration, mg/kg: **633.005**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	3,299	2.29E-11	1.92E-01	Pass
	Method C	63,333	3.06E-12	9.99E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	189	5.30E-08	1.18E+00	Fail
	Target TPH GW Conc. @ 500 ug/L	124	NA	NA	Fail

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	**3,298.99**	**63,332.79**
Most Stringent Criterion	**HI =1**	**HI =1**

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	YES	3.30E+03	1.19E-10	1.00E+00	YES	6.33E+04	3.06E-10	1.00E+00
Total Risk=1E-5	*NO*	2.77E+08	1.00E-05	8.40E+04	*NO*	2.07E+09	1.00E-05	3.27E+04
Risk of Benzene= 1E-6	*NO*	2.77E+07	1.00E-06	8.40E+03	NA			
Risk of cPAHs mixture= 1E-6	NA	NA	NA	NA				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**HI=1**
Protective Ground Water Concentration, ug/L	**569.83**
Protective Soil Concentration, mg/kg	**188.84**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	5.70E+02	2.33E-08	1.00E+00	1.89E+02
Total Risk = 1E-5	*NO*	7.58E+02	1.14E-07	1.27E+00	100% NAPL
Total Risk = 1E-6	*NO*	7.58E+02	1.14E-07	1.27E+00	100% NAPL
Risk of cPAHs mixture= 1E-5	NA	NA	NA	NA	NA
Benzene MCL = 5 ug/L	*NO*	7.58E+02	1.14E-07	1.27E+00	100% NAPL
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 66000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 500 ug/L	5.00E+02	1.63E-08	8.93E-01	**1.24E+02**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 04/30/19
Site Name: Ken's Auto Wash
Sample Name: P-11 8-10

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	31	2.67%
AL_EC >6-8	380	32.70%
AL_EC >8-10	150	12.91%
AL_EC >10-12	230	19.79%
AL_EC >12-16		0.00%
AL_EC >16-21		0.00%
AL_EC >21-34		0.00%
AR_EC >8-10	210	18.07%
AR_EC >10-12	120	10.32%
AR_EC >12-16	41	3.53%
AR_EC >16-21		0.00%
AR_EC >21-34		0.00%
Benzene	0.0295	0.00%
Toluene	0.12	0.01%
Ethylbenzene	0.0295	0.00%
Total Xylenes	0.0735	0.01%
Naphthalene		0.00%
1-Methyl Naphthalene		0.00%
2-Methyl Naphthalene		0.00%
n-Hexane		0.00%
MTBE		0.00%
Ethylene Dibromide (EDB)		0.00%
1,2 Dichloroethane (EDC)		0.00%
Benzo(a)anthracene		0.00%
Benzo(b)fluoranthene		0.00%
Benzo(k)fluoranthene		0.00%
Benzo(a)pyrene		0.00%
Chrysene		0.00%
Dibenz(a,h)anthracene		0.00%
Indeno(1,2,3-cd)pyrene		0.00%
Sum	1162.2525	100.00%

Notes for Data Entry | Set Default Hydrogeology

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:
Enter site-specific information here……..

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	500	ug/L

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 4/30/2019
Site Name: Ken's Auto Wash
Sample Name: P-11 8-10
Measured Soil TPH Concentration, mg/kg: **1,162.253**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	3,885	1.62E-09	2.99E-01	Pass
	Method C	74,131	2.17E-10	1.57E-02	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	77	2.67E-06	1.54E+00	Fail
	Target TPH GW Conc. @ 500 ug/L	72	NA	NA	Fail

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

Warning! Check Residual Saturation (WAC340-747(10)).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	**3,885.16**	**74,130.72**
Most Stringent Criterion	**HI =1**	**HI =1**

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	YES	3.89E+03	5.43E-09	1.00E+00	YES	7.41E+04	1.39E-08	1.00E+00
Total Risk=1E-5	*NO*	7.16E+06	1.00E-05	1.84E+03	*NO*	5.34E+07	1.00E-05	7.21E+02
Risk of Benzene= 1E-6	*NO*	7.16E+05	1.00E-06	1.84E+02				
Risk of cPAHs mixture= 1E-6	NA	NA	NA	NA		NA		
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**HI=1**
Protective Ground Water Concentration, ug/L	**516.73**
Protective Soil Concentration, mg/kg	**77.32**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	5.17E+02	4.18E-07	1.00E+00	7.73E+01
Total Risk = 1E-5	*NO*	8.98E+02	4.24E-06	1.62E+00	100% NAPL
Total Risk = 1E-6	*NO*	7.21E+02	1.00E-06	1.33E+00	2.15E+02
Risk of cPAHs mixture= 1E-5	NA	NA	NA	NA	NA
Benzene MCL = 5 ug/L	*NO*	8.98E+02	4.24E-06	1.62E+00	100% NAPL
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 66000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 500 ug/L	5.00E+02	3.93E-07	9.71E-01	**7.23E+01**

Appendix C - Backup Calculations for Indoor/Sub-Slab Soil Gas Screening Levels
Ken's Auto Wash
7168-10

Sample P-7 Non-Carinogenic Measurements and Calculations from PVI Memo #18

Petroleum Fraction or Compound	Measured Conc. Site-Specific Sample in µg/m^3	Non-Detect?	Fraction of Total Concentration (Fi)	Non-Carcinogenic (CULi) in µg/m3	Fi/CULi
Aliphatics EC>5-8	9010		7.74E-01	2.72E+03	2.85E-04
Aliphatics EC>9-12	2600		2.23E-01	1.36E+02	1.64E-03
Aromatics EC>9-10	0	Yes	0.00E+00	1.82E+02	0.00E+00
Benzene	6.71		5.77E-04	1.37E+01	4.21E-05
Toluene	10.4		8.94E-04	2.24E+03	3.99E-07
Ethylbenzene	0	Yes	0.00E+00	4.58E+02	0.00E+00
Xylenes	7.58		6.51E-04	4.64E+01	1.40E-05
Naphthalene	0	Yes	0.00E+00	1.38E+00	0.00E+00
Total TPH	11,635		1.00		1.98E-03

Calculated Method B Indoor Air Screening level = $1/\sum(Fi/CULi)$ 504
Calculated Method B Sub-Slab Soil Gas Screening Level = Indoor Air/0.03 **16798**