Remedial Investigation Report

Report Version: V.1

Site Name:	**Adams Street Building**
Site Address:	**6707-6709 S Adams Street** **Tacoma, Washington 98409**
Alternate Location Info:	NA

Ecology Facility Site ID No.:	**7177**
Voluntary Cleanup Program Project No.:	**SW1530**
Order No.:	NA
Consent Decree No.:	NA

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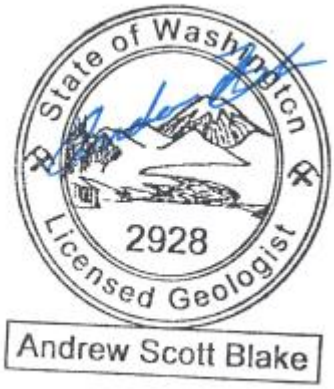

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ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirements
AEG	Associated Environmental Group, LLC
BGS	below ground surface
COC	Contaminant/Chemical of Concern
COPC	Contaminant/Chemical of Potential Concern
CSID	Cleanup Site Identification number
CSM	Conceptual Site Model
CUL	clean-up levels
Ecology	Washington State Department of Ecology
EPA	Environmental Protection Agency
FOC	Fraction of Organic Carbon
FSID	Facility Site identification number
HVOC	Halogenated Volatile Organic Compound
IDW	Investigation-Derived Waste
MTCA	Model Toxics Control Act
PCE	tetrachloroethylene
PID	Photoionization detector
PSD	particle size distribution
QAPP	Quality Assurance Project Plan
RCW	Revised Code of Washington
SAP	Sampling and Analysis Plan
SEC	Succeed Environmental Consulting LLC
TCE	trichloroethylene
TEE	Terrestrial Ecological Evaluation
TPH	total petroleum hydrocarbon
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compound
WAC	Washington State Administrative Code

EXECUTIVE SUMMARY

This Remedial Investigation Report has been prepared for the Adams Street Building site located at 6707-6709 S Adams Street in Tacoma, Washington. A formal wear business historically occupied the site (circa 1999-2015). During that time, two closed-loop dry-cleaning machines and associated small-quantity materials were historically located on the project site.

In 2016 Ecology opened cleanup file no. 7177 for the project site following the detection of residual PCE in soil, groundwater, and vapor samples collected proximate to the former dry-cleaning machines. SEC has no knowledge of reported hazardous materials leaks or spills at the project site.

Between 2016 and 2018, the magnitude and extent of PCE impact was studied, and a CSM was developed in accordance with MTCA. Based on the findings of this RI, it is our professional opinion that sufficient data has been obtained to demonstrate the following:

- Groundwater conditions at the project site meets corresponding cleanup standards and are considered protective of human health and the environment.
- The residual presence of PCE in soil meets corresponding site-specific cleanup standards and is considered protective of human health and the environment.
- Indoor or ambient at the project site meets corresponding cleanup standards and is considered protective of human health and the environment.

SEC previously evaluated project site conditions with respect to Ecology's requirement for a terrestrial ecological evaluation (TEE) pursuant to MTCA (WAC 173-340) to evaluate whether PCE identified at the project site presents an adverse risk to ecological receptors in the project site vicinity. Based on our findings (SEC 2018), since none of the compounds identified at the project site are listed as priority contaminants of ecological concern (listed in WAC-173-340-900; Table 749-2), no further terrestrial ecological evaluation is warranted.

No field evidence of chemical impact was observed by SEC during exploration activities conducted at the project site. Regardless, all investigation-derived waste (IDW) generated during investigation activities was placed in 55-gallon drums on-site pending disposal. SEC intends to subcontract a licensed waste disposal service to dispose of all IDW generated at the project site. All associated disposal documentation will be provided to Ecology.

After Ecology has completed its review of this report, we respectively request an opinion on the completed actions. In our professional opinion, the data presented in this report may warrant an opinion of "No Further Action" for the project site.

1. INTRODUCTION

The objective of the Remedial Investigation (RI) is to characterize the nature and extent of residual PCE on the property located at 6707-6709 S Adams Street site in Tacoma, Washington (project site). The project site is shown relative to surrounding physical features on Figure 1 and is described in the following sections.

1.1. GENERAL SITE INFORMATION

Site Name	Adams Street Building
Site Address	6707-6709 S Adams Street, Tacoma, WA 98409
Facility/Site I.D.	7177
Cleanup Site I.D.	13051
VCP Site I.D.	SW1530
Project Consultant	Andrew Blake Succeed Environmental Consulting LLC 6028 NE 49th Avenue, Portland, OR 97218 ablake@succeed-env.com (971) 371-0404
Customer Contact	Ed Honeycutt 16113 NW 27th Court, Vancouver, WA 98685 edhoneycutt@mrformalinc.com (503) 939-7519
Property Owner Contact	Stephen Nielsen 7216 Lakewood Drive W, Lakewood, WA 98499 holroydsn@aol.com (253) 279-1686
Lat/Long (decimal degrees)	47.196 / -122.486

The 1.29-acre project site includes Pierce County tax parcels 0220251164 and 0220251163, which are located in Section 25, Township 20 North, Range 2 East of the Willamette Meridian. The project site is situated in an industrial area of Tacoma, and the site structure consists of a single-level industrial warehouse with an attached two-level office area.

One sanitary sewer line is located beneath the northeastern portion of the project site and was connected the project site restrooms and a former commercial washing machine drain (that discharged only water and biodegradable soap) to a sewer conveyance line located north of the project site structure. The commercial washing machine connection has since been removed. Surface water that accumulates at the project site is generally expected to infiltrate the ground surface or flow across the roof of the project site structure and across paved surfaces towards catch basins located to the west of the project site structure.

1.2. SITE HISTORY

The project site historically consisted of vacant land until approximately 1974, when the existing ~15,000-square-foot structure was built with a concrete slab-on-grade foundation, metal framework, and connected to municipal utilities. Since the building was constructed, the project site was used for road sign assembly (1978–1994), athletic apparel assembly (1994–1999), formal

wear storage, repair, and cleaning (1999-2015), materials storage for a roofing installation company (2015 – 2018), and a warehouse for decorative concrete landscape products (present day).

Dry cleaning activities were conducted at the project site between approximately 1999 and 2015 using two closed-loop "dry-to-dry" (Union Flexmatic 353) dry cleaning machines, which utilized tetrachloroethylene (PCE)-based solvents. According to information provided by Mr. Ed Honeycutt, PCE was delivered and disposed of in "keg style" containers that created a closed loop piping system, and spent filters were placed in 15-gallon-containers and periodically disposed of off-site by Safety-Kleen (estimated once every four months), when the dry-cleaning machines were in operation. Both machines were located within secondary containment trays mounted on a concrete floor slab inside the building.

In addition to the above-noted dry-cleaning activities, spot removers were used at the project site. These materials were typically stored in small (1-gallon or less) containers prior to use. SEC has no knowledge of reported hazardous materials leaks or spills at the project site. Between 2015 and 2016, PCE was identified in soil, groundwater, and vapor at the project site, which is discussed in Section 2.1 of this report. The approximately project site building layout and location of former dry-cleaning machines are shown on Figure 2.

1.3. SITE USE

The project site structure is currently used as a commercial/industrial warehouse for decorative concrete landscape materials. Exterior areas are used for parking and storage of concrete products. SEC has no knowledge of environmental-related permits or violations associated with current or past uses of the project site.

2. FIELD INVESTIGATIONS, INTERIM MEASURES, AND SITE CHARACTERIZATION

2.1. PREVIOUS ENVIRONMENTAL INVESTIGATION

Between 2015 and 2016, Associated Environmental Group, LLC (AEG) of Olympia, Washington conducted a subsurface investigation at the project site. The investigation included the installation of four groundwater monitoring wells (MW-1 through MW-4), a subsequent well monitoring event, and the collection of numerous soil, vapor, and grab groundwater samples from ten subsurface explorations (B-1 through B-10). During this time, PCE was detected in soil, groundwater, and vapor at the project site. Specifically, PCE was detected in eight soil samples and three groundwater samples at concentrations that slightly exceeded corresponding Model Toxics Control Act (MTCA) Method A cleanup levels. It should be noted that the building's sewer line connection is located near monitoring well MW-1, where no elevated concentrations of PCE have been detected in groundwater. AEG's chemical analytical results are included in Tables 2 through 4 of this report. A copy of AEG's report (AEG 2016) is currently on file with Ecology. A copy of AEG's exploration logs are provided in Appendix A and all associated chemical analytical data is provided in Appendix B.

It should also be noted that the AEG report (AEG 2016) reported the presence of a "former steam cleaning pad" at the project site. The AEG site plans also presented a series of dashed lines that were not specifically identified in the report. SEC corresponded with a representative of Mr. Formal, Inc. and conducted a reconnaissance of the project site. Based on our review and research, there was no steam cleaning pad at the project site. The feature that was mislabeled as a steam cleaning pad was the concrete foundation for a former commercial washing machine that discharged only water and biodegradable soap to the sanitary sewer. Based on our observations, the previously-

unidentified dashed lines that were presented in the AEG report were intended to represent the approximate locations of interior walls at the site.

2.2. INTERIM REMEDIAL MEASURES

Between November 2017 and February 2018, SEC drilled two 4-inch-diameter holes through the concrete floor slab (near the former dry-cleaning machines) and placed 4-inch-diameter PVC vent pipes equipped with an in-line fans in each hole. The base of the vent pipe was grouted in-place, the vent pipe was extended through the roof of the project site structure, and the in-line fans (Fan-1 and Fan-2) were activated. It should be noted that the fans were turned off at least one week prior to collecting any sub-slab vapor or indoor air samples. The approximate fan locations are shown on Figures 2 and 3.

2.3. SITE CHARACTERIZATION

2.3.1. CONTAMINANTS OF POTENTIAL CONCERN

Based on the results of AEG's investigation (Section 2.1) and the brief historical use of the project site as a dry-cleaning facility, COPCs evaluated by SEC included HVOCs (PCE, TCE, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethene, and vinyl chloride). Based on the information presented herein, it is our professional opinion that there is sufficient data to demonstrate that PCE is the only COPC at the project site.

Chloroform was also detected in one or more groundwater samples at concentrations greater than laboratory reporting limits. However, it is our professional opinion that the data presented herein is sufficient to demonstrate that chloroform should not be considered a COPC at the project site.

2.3.2. SAMPLING AND MONITORING

Investigation activities were conducted by SEC between November 2017 and September 2018. The purpose of our exploration was to evaluate the aerial and vertical magnitude and extent of COPC impact at the project site.

Prior to conducting ground-disturbing activities at the project site, SEC contacted the Washington One-Call Utility Notification Center to mark the location of public utilities beneath the project site and subcontracted a private utility locator to clear proposed boring locations.

The sampling equipment used for the collection of samples was decontaminated prior to use, when appropriate. Decontamination was performed on all sample re-usable processing equipment that came into contact with sampling media. Decontamination was performed prior to sampling each location using the following procedures:

1. Rinsed with tap water and scrubbed with a scrub brush until free of large particles
2. Washed with phosphate-free (Alconox™) detergent solution
3. Rinsed with tap water

All investigation-derived waste (IDW) generated during investigation activities was placed in 55-gallon drums on-site pending disposal. SEC intends to subcontract a licensed waste disposal service to dispose of all IDW generated at the project site. All associated disposal documentation will be provided to Ecology.

2.3.2.1. SOIL SCREENING AND SAMPLING

Soil exploration activities were conducted by SEC between February 2018 and May 2018 and included the advancement of nine direct-push borings (DP-1 through DP-9) and one hand-auger boring (HA-1) at the project site. In February 2018, SEC subcontracted Pacific Soil and Water of Tualatin, Oregon, to advance direct-push explorations DP-1 through DP-9 at the project site. SEC observed the explorations and obtained soil samples for analysis. The soil encountered in the explorations was visually classified in general accordance with ASTM D 2488. In May 2018, SEC additionally advanced hand-auger exploration HA-1 near the former dry-cleaning machines. The approximate exploration locations are shown on Figures 2 and 3.

Continuous soil samples were collected from the explorations. Soil samples obtained from direct-push explorations DP-1 through DP-9 were collected from approximately 2-inch-diameter, 60-inch-long samplers lined with acrylic sleeves. Soil sampled from the hand-auger boring HA-1 was collected from the boring by hand. Soil conditions observed by SEC generally consisted of gravel fill material to a maximum depth of approximately 10 to 12 BGS, with underlying native of sand and gravel observed to depths of up to 22 to 26 feet BGS. Gravel was encountered below the sand to the maximum depths explored. Wet soil conditions were generally observed at depths ranging between approximately 6.0 and 13.0 feet BGS. Typical cross sections of subsurface conditions at the project site are presented on Figure 4. Boring logs noting the subsurface conditions observed by SEC are presented in Appendix A.

SEC performed field screening tests on selected soil samples collected from the explorations. Field screening results aided in the selection of soil samples for chemical analysis. Screening methods included visual examination, water sheen screening, and headspace vapor screening as described below:

- Visual screening consisted of inspecting the soil for discoloration indicative of the presence of petroleum material in the sample.
- Water sheen screening involved placing soil in water and observing the water surface for signs of sheen. Sheen classifications are as follows:

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

- Headspace vapor screening is performed by placing a soil sample in a plastic bag. Air is captured in the bag, and the bag is shaken to expose the soil to the air trapped in the bag. The probe of a MiniRAE PID is inserted into the bag, and the MiniRAE PID measures VOC vapor concentrations in units of ppm. The MiniRAE PID is calibrated to isobutylene. The MiniRAE PID is designed to quantify VOC vapor concentrations, but it should be noted that field screening results are site and exploration specific. The results may vary with temperature, soil moisture content, soil type, and type of contaminant.

No field evidence of chemical impact was observed by SEC during exploration activities conducted at the project site. This is generally consistent with AEG's observations. Soil samples selected for analysis were collected at approximately 5- to 10-foot intervals and submitted for chemical analysis.

The samples selected for analysis were collected in laboratory-supplied containers and immediately placed in an ice chest and kept cool until delivery to the laboratory. Standard chain-of-custody procedures were observed during transport of the samples to the laboratory. The results of chemical analysis are discussed further herein.

2.3.2.2. GROUNDWATER WELL INSTALLATION AND MONITORING

Between November 2017 and September 2018, SEC monitored groundwater at the project site. The purpose of the groundwater monitoring effort was to collect groundwater elevation data and samples for chemical analysis. Groundwater monitoring and well installation activities conducted by SEC are chronologically discussed below:

- In November 2017, SEC accessed and sampled monitoring wells MW-1, MW-2, MW-3, and MW-4 during the fourth quarter 2017 groundwater monitoring event.
- In February 2018, Pacific Soil and Water installed one additional groundwater monitoring well (MW-3D) adjacent to MW-3. MW-3D was constructed with a cemented flush (surface-grade) monument, ¾-inch PVC piping, and a 2.5-foot-long "pre-packed" well screen, which was placed at depths of approximately 27.5 to 30.0 feet BGS. Prior to leaving the site, approximately two gallons of water were purged from the well using a peristaltic pump. The purge water was observed during well development activities. Although initially turbid, the groundwater that was discharged from each well appeared clear upon completion of purging activities. Prior to leaving the site, SEC used a self-leveling 360-degree line laser and a transit with an electronic receiver to measure the elevation of the new well relative to the previously-surveyed monitoring well MW-3, which adjoins MW-3D.
- In February 2018 (following construction of MW-3D), SEC accessed and sampled monitoring wells MW-1, MW-2, MW-3, MW-3D, and MW-4 during the first quarter 2018 groundwater monitoring event.
- In May 2018, SEC accessed and sampled monitoring wells MW-1, MW-2, MW-3, MW-3D, and MW-4 during the second quarter 2018 groundwater monitoring event.
- In September 2018, SEC accessed and sampled monitoring well MW-3 (the only well that historically revealed PCE at a concentration greater than the MTCA Method A Cleanup Level) during the third quarter 2018 groundwater monitoring event.

SEC's specific groundwater sampling protocol is described as follows:

- Opened each monitoring well and allowed groundwater levels to equilibrate for at least 30 minutes prior to measuring the depth to groundwater.
- Measured the depths to groundwater to the nearest 0.01 foot using a decontaminated water level indicator.
- Placed disposable polyethylene tubing approximately one foot above the bottom of each well.
- Purged water from each well using a peristaltic pump. During extraction, the tubing was connected to a flow-through cell and groundwater stabilization parameters were measured in general accordance with EPA-recommended low stress (low flow) sampling procedures[1].
- Disconnected the flow-through cell and collected a groundwater sample from each well into laboratory-prepared sample containers for chemical analysis.
- Immediately placed the groundwater samples into a cooler with ice.
- Containerized all decontamination and purge water for future disposal.

[1] *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells*, prepared by EPA, dated September 19, 2017.

- Transported the groundwater samples following chain-of-custody protocol to Apex Laboratories of Tigard, Oregon and Pace Analytical of Mount Juliet, Tennessee for analysis of selected VOCs by EPA Method 8260C.

The groundwater monitoring well elevation data obtained by SEC is presented on Table 1. The groundwater elevations and inferred groundwater flow directions related to sampling events conducted between April 2016 to September 2018 are illustrated on Figure 5. It should be noted that a March 2016 event was not included in this figure, as it is our professional opinion that the MW-1 elevation data collected by AEG in March 2016 appears erroneous.

2.3.2.3. **SOIL GAS/VAPOR SAMPLING**

Between November 2017 and August 2018, SEC collected vapor (sub-slab soil gas) samples at the project site. The purpose of this sampling effort was to characterize vapor conditions at the project site. Vapor sampling activities conducted by SEC are chronologically discussed below:

- In November 2017, SEC advanced nine borings (SV-1 through SV-9) through the concrete floor slab beneath the project site to collect sub-slab vapor samples. The borings were advanced to a depth of approximately 0.5 feet below concrete surface using equipment that is owned and operated by SEC. SEC collected one sub-slab vapor sample from each of the nine borings from sampling systems consisting of laboratory provided 1-liter Summa™ canisters with in-line filters (0.7 micron) and flow controllers (less than 200 milliliters per minute), which were connected to decontaminated stainless-steel soil-gas sampling probes via Teflon™ tubing. SEC sealed the annular space between the soil vapor sampling probe and the boring sidewall with bentonite and cement grout (as appropriate) to minimize ambient air migration into the vapor sampling zone. Stainless steel Swagelok™ fittings were used to create a reasonably closed system. For each sample, the sampling train was slowly purged using a photoionization detector and a leak-check system was installed at each location. Specifically, isopropyl alcohol (2-propanol) was applied to the exteriors of the sample train fittings to verify that the sampling train was reasonably airtight. 2-propanol was not detected in any of the samples at concentrations greater than one percent, indicating that leakage of ambient air did not occur during sample collection. After purging each sample train and waiting at least 30 minutes (equilibration time), each sample was collected.
- In February 2018, SEC advanced one boring (SV-10) through the concrete floor slab beneath the project site to collect a sub-slab vapor sample. The sample was collected following the above-described November 2017 protocol. It should be noted that sub-slab ventilation fans (Fan-1 and Fan-2) were deactivated one week before collecting this sample. Similar to November 2017, the tracer gas (2-propanol) was not detected in the sample, indicating that leakage of ambient air did not occur during sample collection.
- In August 2018, SEC advanced one boring (SV-10) proximate to the February 2018 sample location following the above-described November 2017 protocol. It should be noted that sub-slab ventilation fans (Fan-1 and Fan-2) were deactivated one week before collecting this sample. Similar to November 2017 and February 2018, the tracer gas (2-propanol) was not detected in the sample, indicating that leakage of ambient air did not occur during sample collection.

The approximate sample locations are presented on Figures 2 and 3. The samples were shipped to ESC Lab Sciences of Mt. Juliet, Tennessee (ESC), under general chain-of-custody protocols for analysis of HVOCs and 2-propanol by U.S. Environmental Protection Agency (EPA) Method TO-15.

2.3.2.4. AMBIENT AND BACKGROUND AIR SAMPLING

Between February and August 2018, SEC collected indoor and outdoor (background) air samples at the project site. The purpose of this sampling effort was to characterize ambient air conditions at the project site. Vapor sampling activities conducted by SEC are chronologically discussed below:

- In February 2018, SEC collected three indoor air samples (IA-1 through IA-3) and two ambient (outdoor) air samples BG-1 and BG-2.
- In May 2018, SEC collected one indoor air sample (IA-1) and one ambient (outdoor) air sample BG-1.
- In August 2018, SEC collected one indoor air sample (IA-2) and one ambient (outdoor) air sample BG-2.

The approximate sample locations are shown on Figures 2 and 3. All air samples were collected from the breathing zone (approximately four to five feet above the ground surface) using laboratory-provided 6-liter summa sample containers and 8-hour flow controllers. Following sample collection, these samples were shipped to ESC Lab Sciences of Mt. Juliet, Tennessee under general chain-of-custody protocols for analysis of HVOCs by EPA Method TO-15.

2.3.3. SITE GEOLOGY

The project site is located within the Puget Sound Lowland, an elongated basin extending from the Fraser River valley in British Columbia to just north of Chehalis, Washington. This structural basin is bounded by the Cascade Range to the east and the Olympic Mountains to the west. Bedrock exposures in the lowland are scarce except along the margins due to repeated Pleistocene glaciation. The most recent glaciation was the Vashon Stade of the Fraser Glaciation, which occurred approximately 15,000 to 12,000 years ago (Booth, 1994). A variety of deposits were formed during advance and retreat of the ice sheet during this glaciation.

Geologic maps indicate that the project site is underlain by glacial drift of the Vashon Stade, primarily consisting of stratified outwash sand and gravel with some glacial till (Walsh, 1987). The outwash sand and gravel were deposited as the glaciers receded out of the Puget Sound area and appear to be hundreds of feet thick in the project site vicinity, based on our review of nearby groundwater monitoring well logs (SEC 2018).

The soil encountered in the explorations conducted by SEC (Section 2.2.2.1) was visually classified in general accordance with ASTM D 2488. Soil conditions observed by SEC generally consisted of varying gravel fill material with underlying native of sand and gravel observed to depths of up to 30 feet BGS. Based on our observations, cross sections illustrating subsurface conditions beneath the project site are presented on Figure 4.

2.3.4. SITE HYDROGEOLOGY

Groundwater was measured in project site monitoring wells by SEC at depths ranging between approximately 6.0 and 13.0 feet BGS. The groundwater level measurements taken by AEG (AEG 2016) from monitoring wells MW-2, MW-3, and MW-4 are consistent with the measurements taken by SEC.

Based on our review of the November 2017, February 2018, and May 2018 groundwater elevation data obtained by SEC, groundwater beneath the subject site appears to be flowing in a south-

southwesterly direction with a vertical gradient ranging between approximately 0.01 (February 2018) to 0.0004 (November 2017). The groundwater elevation data obtained by SEC is presented on Table 1 and Figure 5.

There are no surface water bodies at the project site. Based on the layout of the project site, stormwater would only be expected to infiltrate the ground surface in exterior unpaved eastern portion of the project site, where COPCs have not been identified.

2.4. SAMPLING/ANALYTICAL RESULTS

2.4.1. QUALITY ANALYSES

SEC strives to ensure that the quality of our data meets the necessary data quality objectives. The following sections summarize the field and laboratory QA/QC procedures that were conducted during this project.

2.4.1.1. FIELD QUALITY ASSURANCE

SEC's field quality assurance program consisted of the following:

- Chain-Of-Custody procedures
- Collection and analysis of field duplicate samples
- Maintenance of chain-of-custody documentation

Chain-of-custody procedures were followed during handling and transport of samples to the analytical laboratory.

Field duplicates consist of two samples collected sequentially from one sample location to assess data variability. Field duplicate groundwater samples were collected at frequency of 13 percent of the total number of samples submitted for each analysis.

All samples were collected via clean single-use disposal materials. Accordingly, there was no need to evaluate the adequacy of the equipment decontamination procedures or the possibility of cross-contamination caused by decontamination of sampling equipment. Further, the consistence of chemical analytical results (discussed below) indicates that no cross-contamination occurred. Regardless, two equipment blank samples were collected from clean tubing and analyzed, and one trip blank was analyzed during this investigation.

2.4.1.2. LABORATORY QUALITY ASSURANCE

Apex Laboratories, LLC of Tigard, Oregon and ESC Lab Sciences (currently Pace Analytical), of Mt. Juliet, Tennessee maintain an internal QA program that is documented in each laboratory report. The laboratory uses a combination of blanks, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries, blank spike recoveries, and blank spike duplicate recoveries to evaluate the chemical analytical results. Acceptability or control limits for analysis are statistically derived by the laboratory in accordance with EPA guidelines.

SEC reviewed the attached analytical data reports for data quality exceptions and deviations from acceptable method performance criteria. Based on SEC's review of the laboratory chemical analytical data (Appendix B), SEC did not identify hold time, internal QA, or laboratory naming

discrepancies and the reporting limits provided by the lab were sufficient to make comparisons to corresponding cleanup and cleanup and screening levels for the COPCs identified. Based on our review of the analytical reports, the analytical data appear acceptable for their intended use.

2.4.2. RESULTS

The chemical analytical results obtained by SEC and AEG are presented in Tables 2 through 5. The chemical analytical laboratory reports and chain-of-custody documentation associated with SEC's investigation are provided in Appendix B.

2.4.2.1. GROUNDWATER CHEMICAL ANALTYICAL RESULTS

Groundwater samples[2] collected from the project site were analyzed for the selected VOCs by EPA Method 8260C. With the exception of AEG's March 2016 sampling event (when elevated PCE was detected proximate to MW-3), VOCs were either not detected at concentrations greater than laboratory reported detection limits (RDLs), or were detected at concentrations less than corresponding MTCA Method A Cleanup Levels. Based on the results of groundwater monitoring at the project site, the low-level impacts identified by others (AEG 2016) do not appear to have adversely affected groundwater beneath the project site. The groundwater chemical analytical results are shown on Table 2.

2.4.2.2. SOIL CHEMICAL ANALTYICAL RESULTS

Soil samples[3] collected throughout the project site were analyzed for the selected VOCs by EPA Method 8260C. VOCs were either not detected at concentrations greater than laboratory reported detection limits (RDLs) or were detected at concentrations less than the site-specific cleanup level discussed in Section 4.3. These results indicate that the area of impact identified by others (AEG 2016) has been delineated vertically and horizontally and low-level soil impacts appear to be limited to a small shallow area of the site located near the former dry-cleaning machines. The soil chemical analytical results are presented on Table 3.

2.4.2.3. SOIL GAS/VAPOR CHEMICAL ANALTYICAL RESULTS

Sub slab vapor samples SV-1 through SV-10 were analyzed for HVOCs and 2-propanol by EPA Method TO-15. VOCs were not detected in the sub-slab vapor samples collected at the project site at concentrations greater than the corresponding site-specific cleanup level discussed in Section 4.5. Although PCE was detected in samples collected near the former dry-cleaning machine, this low-level area of impact appears limited to this area and indoor air samples collected in this area (Section 2.3.2.4) indicate no risk to site occupants. The corresponding chemical analytical results are presented in Table 4.

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[2] MW-1, MW-2, MW-3, MW-3D, and MW-4

[3] HA-1(2.0-3.0), DP-2 (6.0-8.0), DP-2 (11.0-13.0), DP-2(15.0-17.0), DP-3 (5.0-7,0), DP-3 (12.0-14.0), DP-3 (23.0-25.0), DP-4 (1.0-3.0), DP-4 (12.0-14.0), DP-4 (23.0-25.0), DP-5 (17.0-19.0), DP-5 (23.0-25.0), DP-6 (17.0-19.0), DP-6 (23.0-25.0), DP-7 (11.0-13.0), DP-7 (22.0-24.0), DP-8 (14.0-15.0), DP-8 (18.0-20.0), and DP-9 (24.0-26.0)

2.4.2.4. **AMBIENT AIR CHEMICAL ANALTYICAL RESULTS**

Ambient air samples IA-1, IA-2, IA-3, BG-1 and BG-2 were analyzed for HVOCs by EPA Method TO-15. VOCs were either not detected at concentrations greater than laboratory reported detection limits (RDLs) or were detected at concentrations less than corresponding MTCA Method C (Industrial Air) Cleanup Levels. Based on the low concentrations of PCE detected in the indoor air samples, the chemical analytical results indicate a low risk of an adverse vapor intrusion condition at the project site. The chemical analytical results are presented on Table 5.

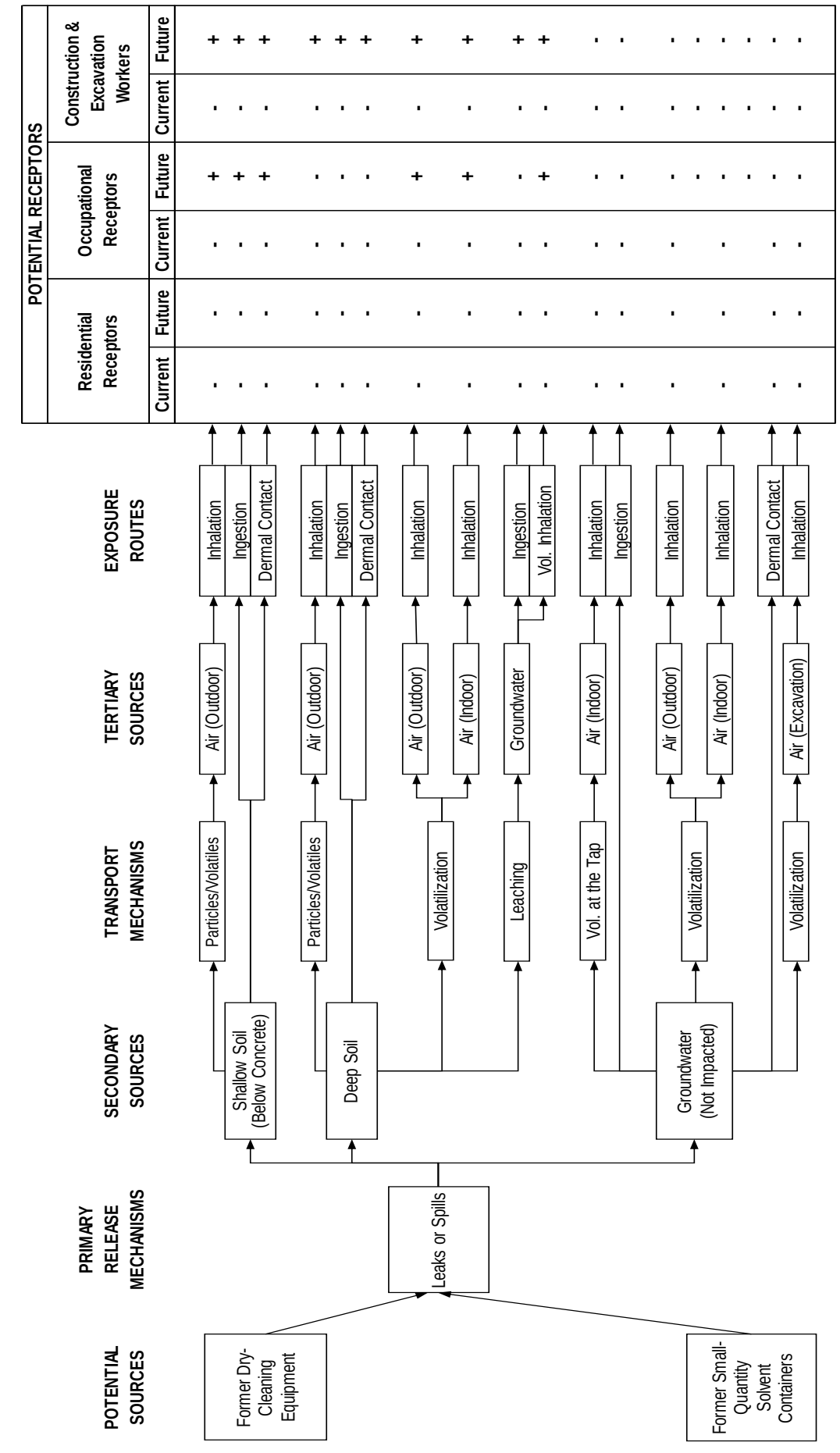
3. CONCEPTUAL SITE MODEL

The purpose of a CSM is to describe (1) sources of contamination, (2) pathways for contaminant transport, and (3) potential receptors of contamination at the project site. The parameters that were considered by SEC during development of this CSM are summarized as follows:

1. **Potential source of contamination:** Between 2015 and 2016, PCE was identified in soil and groundwater at concentrations slightly exceeding MTCA Method A cleanup levels. The results of subsequent groundwater monitoring indicate that groundwater at the project site is no longer impacted by PCE at concentrations greater than the MTCA Method A cleanup level. Although, there is not documentation of leaks or spills, potential releases from the former dry-cleaning machines or small-quantity PCE containers are the likely source of PCE in soil.
2. **Fate and transport:** A small pocket of residual PCE-impacted soil is situated beneath a concrete floor slab near the former dry-cleaning machines at the project site. Based on our knowledge of subsurface conditions at the project site, the primary pathways for contaminant transport would be the migration of vapors, direct contact of impacted soil with human receptors, and leaching to groundwater.
3. **Receptors:** Based on our understanding that (1) the project site and all surrounding properties are developed for industrial uses, (2) the low-level impacted soil at the project site is (and will be) covered by the concrete floor slab underlying the project site structure, and (3) groundwater is not currently impacted by PCE at a concentration greater than the MTCA Method A cleanup level, the only human health receptors would be exposed to soil at the project site would be site workers.

SEC evaluated project site conditions with respect to Ecology's requirement for a terrestrial ecological evaluation (TEE) pursuant to MTCA (WAC 173-340) to evaluate whether PCE identified at the project site presents an adverse risk to ecological receptors in the project site vicinity. Based on our findings (SEC 2018), since none of the compounds identified at the project site are listed as priority contaminants of ecological concern (listed in WAC-173-340-900; Table 749-2), no further terrestrial ecological evaluation is warranted. The results of our conceptual site model are tabulated as follows:

CSM


POTENTIAL SOURCES
PRIMARY RELEASE MECHANISMS
SECONDARY SOURCES
TRANSPORT MECHANISMS
TERTIARY SOURCES
EXPOSURE ROUTES
POTENTIAL RECEPTORS
Residential Receptors
Occupational Receptors
Construction & Excavation Workers
Current
Future
Former Dry-Cleaning Equipment
Former Small-Quantity Solvent Containers
Leaks or Spills
Shallow Soil (Below Concrete)
Deep Soil
Groundwater (Not Impacted)
Particles/Volatiles
Volatilization
Leaching
Vol. at the Tap
Air (Outdoor)
Air (Indoor)
Groundwater
Air (Excavation)
Inhalation
Ingestion
Dermal Contact
Vol. Inhalation
Notes:
+ This route is a primary source of exposure.
- There is no exposure by this route.

4. PROPOSED CLEANUP STANDARDS

Cleanup standards were established in accordance with WAC 173-340-700. The cleanup standards proposed for the project site are determined based on potential risks to human health and the environment.

4.1. CONTAMINANT-SPECIFIC STANDARDS

PCE and chloroform were detected at the project site in soil, vapor, and/or groundwater at concentrations greater than laboratory reporting limits. Although chloroform was detected in one groundwater well sample collected from monitoring well MW-1 at a concentration greater than the corresponding Method B (cancer) cleanup level, it should be noted that chloroform was not detected in subsequent groundwater well samples collected from MW-1 (or any other well) at concentrations exceeding any established MTCA cleanup levels.

Pursuant to WAC 173-340-703, we believe that the data presented herein is sufficient to demonstrate that chloroform, which does not appear to contribute to the overall threat to human health and the environment, can be eliminated from consideration as a COC. Based on the foregoing, PCE has been selected as the indicator hazardous substance at the project site.

4.2. GROUNDWATER CLEANUP STANDARDS

The project site is located in an area that is utilized for potable groundwater. Based on its location, it is our professional opinion that MTCA Method A cleanup levels for groundwater can be used for comparison of the chemical analytical results, as they are consistent with current drinking water standards. PCE was not detected in groundwater during monitoring activities conducted in 2017 or 2018 at concentrations greater than the applicable cleanup standard of **5 mg/L**. Based on the foregoing, it is our professional opinion that groundwater at the project site is protective of human health and the environment.

4.3. SOIL CLEANUP STANDARDS

Based on the industrial use of the project site and the findings of the site-specific CSM, the only reasonable exposure pathways that are considered for the project site are (1) inhalation or ingestion by future site workers and (2) the leaching to groundwater pathway. The maximum detected concentration of PCE in soil [0.74 mg/kg] is significantly less than the corresponding Method B and Method C cleanup levels related to the soil ingestion pathway [476 mg/kg and 21,000 mg/kg, respectively (Ecology 2012)].

The MTCA Method A industrial cleanup level for PCE was established to be theoretically protective of groundwater via the leaching pathway (Ecology 2012). Although the maximum concentration of PCE historically detected in soil at the project site [0.74 mg/kg (AEG 2016)] is greater than the MTCA Method A cleanup level for PCE (0.05 mg/kg), it can be empirically demonstrated that the measured soil concentrations do not, and will not likely, cause an exceedance of the groundwater cleanup level. Pursuant to WAC 173-340-747, SEC has empirically derived soil concentrations for groundwater protection, based on the following:

- PCE concentrations detected at the project site during 2017 and 2018 groundwater monitoring activities are less than the corresponding MTCA Method A cleanup level.

- The former dry-cleaning machines and all associated products (the presumed source of the historical release) were removed from the project site in 2015. Based on the relatively small area of soil that was impacted by PCE and the apparent age of the release, it is our professional opinion that sufficient time that has elapsed since the release occurred to conclude that the concentrations of PCE historically detected in soil will not cause an exceedance of the MTCA Method A groundwater cleanup level at any time in the future.
- Current characteristics of the site [shallow depth to groundwater, presence of permeable (sands and gravel, and the relatively small mass of PCE (based on the low concentrations detected)] are representative of worst-case future site conditions.
- Changes to land use at the project site are not anticipated in the foreseeable future.

Based on (1) the results of historical research, (2) the high-quality groundwater monitoring data obtained, which shows that PCE is not present at concentrations greater than the MTCA Method A cleanup level, (3) our understanding that sufficient time has elapsed for contamination to have migrated from soil to groundwater, (4) the use of reasonable conservative assumptions presented herein, and (5) our understanding that groundwater concentrations will not likely exceed the cleanup levels in the future, SEC has selected the highest measured soil concentration as the site-specific cleanup level for PCE.

It is our professional opinion that the burden of proof has been met to utilize a value of **0.74 mg/kg** (the highest detected concentration of PCE in soil at the project site) as the site-specific cleanup level for PCE as protective of the soil leaching to groundwater pathway. Based on the foregoing, it is our professional opinion that the residual presence of PCE in soil is protective of human health and the environment.

4.4. CLEANUP STANDARDS FOR INDOOR AND AMBIENT AIR

WAC 173-340-750 provides Method C industrial air cleanup levels. Industrial air cleanup levels are applicable for facilities that are located on industrial land (per WAC 173-340-200 and 173-340-745), when potential receptors are industrial workers. The project site and surrounding properties are used for industrial purposes. Based on the foregoing, it is our professional opinion that MTCA Method C cleanup levels for indoor and ambient air [MTCA Method C (cancer and non cancer)] should be used for comparison of the chemical analytical results, as they have been established as protective of human health.

No VOCs were detected in indoor or ambient air at concentrations greater than the applicable cleanup standards during this investigation. Based on the results of sampling activities performed by SEC, it is our professional opinion that indoor or ambient at the project site is protective of human health and the environment.

4.5. CLEANUP STANDARDS FOR SOIL GAS

With the exception of PCE, no VOCs were detected in soil gas at concentrations greater than draft MTCA Method B screening levels at the project site. Although MTCA regulations do not contain specific requirements for calculating or achieving soil vapor cleanup standards, SEC understands that industrial cleanup standards for VOCs in soil gas can be established on a site-specific basis using the Johnson and Ettinger Vapor Intrusion Model (JEM).

SEC calculated a site-specific soil gas screening level for PCE. Specifically, SEC utilized JEM to calculate a *soil gas to indoor air attenuation coefficient* of **0.0030** for PCE based on site-specific building dimensions, the highest-detected concentration of PCE, and otherwise generic values provided by EPA in the JEM model. The most stringent industrial indoor air cleanup level [MTCA Method C Screening Level (cancer) of **40 µg/m^3**] was then divided by the JEM-derived attenuation coefficient to obtain a site-specific industrial soil gas cleanup standard of **13,333 µg/m^3** for PCE. A copy of the worksheet used by SEC is provided in Appendix C

Based on the results of sampling activities performed by SEC and others, it is our professional opinion that the detected concentrations of VOCs in soil gas at the project site are protective of human health and the environment.

5. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1. SUMMARY AND CONCLUSIONS

This Remedial Investigation Report has been prepared for the Adams Street Building site located at 6707-6709 S Adams Street in Tacoma, Washington. A formal wear business with two closed-loop dry-cleaning machines and associated small-quantity materials were historically located on the project site between 1999 and 2015.

In 2016 Ecology opened the current cleanup file for the project site following the identification of residual PCE in soil, groundwater, and vapor samples collected proximate to the former dry-cleaning machines.

Between 2016 and 2018, the magnitude and extent of PCE impact was evaluated and a CSM was developed in accordance with MTCA. Based on the findings of this RI, it is our professional opinion that sufficient data has been obtained to demonstrate the following:

- Groundwater conditions at the project site meets corresponding cleanup standards and are considered protective of human health and the environment.
- The residual presence of PCE in soil meets corresponding cleanup standards and is considered protective of human health and the environment.
- Indoor or ambient at the project site meets corresponding cleanup standards and is considered protective of human health and the environment.

5.2. RECOMMENDATIONS

After Ecology has completed its review of this report, we respectively request an opinion on the completed actions. In our professional opinion, the data presented in this report may warrant an opinion of "No Further Action" for the project site.

6. REFERENCES

- Walsh, Timothy J., compiler, 1987, Geologic Map of the South Half of the Tacoma Quadrangle, Washington. Washington Division of Geology and Earth Resources, Open File Report 87-3, text 12 p., 1 plate, scale 1:100,000.

- Booth, Derek B., 1994, Glaciofluvial infilling and scour of the Puget Lowland, Washington, during ice-sheet glaciation. Geology, v. 22, n. 8, pp. 695-698.

- Lombard, S. and C. Kirchmer, 2004. *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies*. Washington State Department of Ecology, Olympia, Washington. 48 pages + appendices. Publication No. 04-03-030. http://www.ecy.wa.gov/biblio/0403030.html

- Ecology 2011 (rev). *Guidance for Remediation of Petroleum Contaminated Sites*. Washington State Department of Ecology, Olympia, Washington. 197 pages. Publication No. 10-09-057.

- Ecology, 2012. *Trichloroethylene Toxicity Information and MTCA Cleanup Levels*. https://fortress.wa.gov/ecy/clarc/FocusSheets/CLARC%20guidance%20TCE%20PCE.pdf

- Ecology 2013 (rev). *Model Toxics Control Act Regulation and Statute*. Washington State Department of Ecology, Olympia, Washington. 324 pages. Publication No. 94-06. http://www.ecy.wa.gov/biblio/9406.html

- AEG 2016. *Subsurface Investigation Report; Conducted on: Adams Street Building; 6707 S Adams Street; Tacoma, Washington 98409*, dated April 28, 2016.

- Ecology, 2016a. Frequently Asked Questions (FAQ's) Regarding Empirical Demonstrations and Related Issues (DRAFT Implementation Memorandum No. 15). Washington State Department of Ecology, Olympia, WA. 42 pages. Publication No. 16-09-047. https://fortress.wa.gov/ecy/publications/SummaryPages/1609047.html

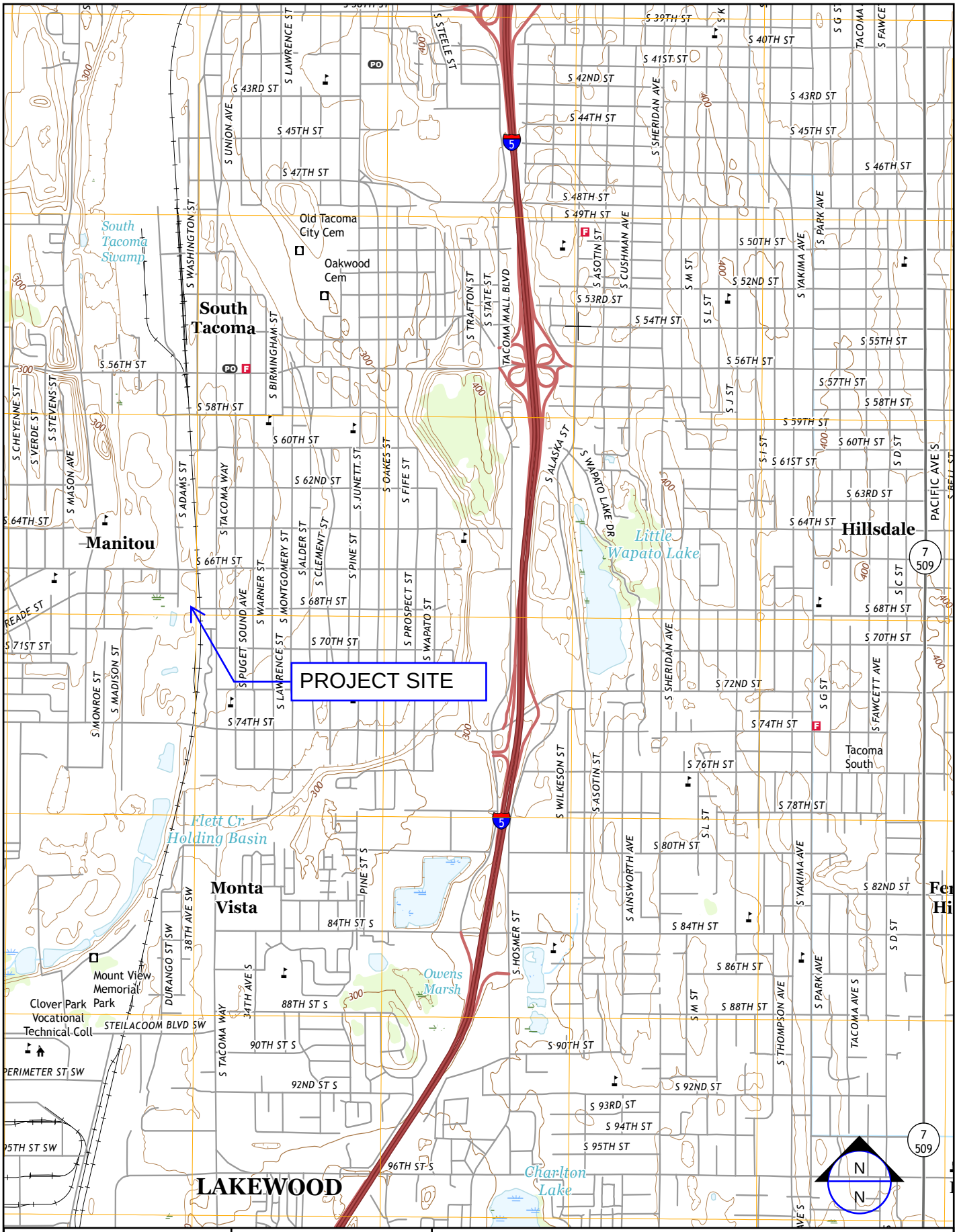
- Ecology 2016b. Letter *Re: Further Action at the following Site:; Site Name: Adams Street Building; Site Address:; 6707 S Adams Street, Tacoma, Washington 98409 Pierce Co.; Facility/Site No.: SW 1530*, dated December 14, 2016

- U.S. EPA Region I, 2017. *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater samples from Monitoring Wells*, EQASOP-GW 001, Revised September 2017.

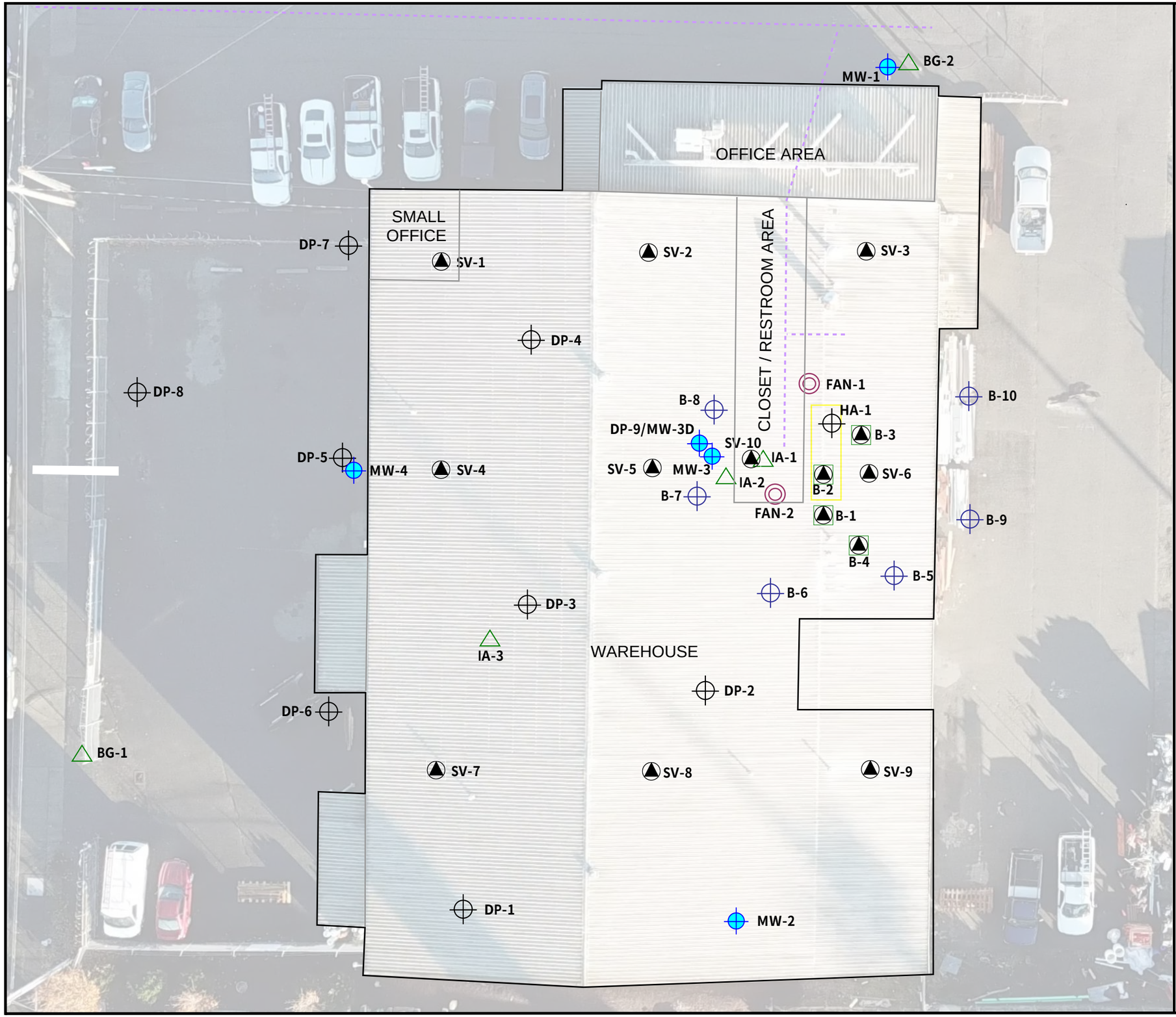
- SEC 2018. *Supplemental Data Report and Investigative Work Plan; 6707-6709 S Adams Street; Tacoma, Washington; Cleanup Site I.D. 13051*, dated January 11, 2018

- Ecology, 2018 (rev). DRAFT *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*, dated October 2009, revised February 2016 and April 2018.

FIGURES



SUCCEED ENVIRONMENTAL CONSULTING, LLC	HE-1-01	VICINITY MAP
	OCTOBER 2018	6707-6709 S ADAMS STREET TACOMA, WASHINGTON
		FIGURE 1



LEGEND:

- BUILDING LAYOUT
- MW-1 — WELL LOCATION
- B-5 — BORING LOCATION (AEG 2016)
- DP-1 — BORING LOCATION (SEC 2018)
- B-1 — SOIL GAS SAMPLE LOCATION (AEG 2016)
- SV-1 — SOIL GAS SAMPLE LOCATION (SEC 2017-2018)
- IA-1 / BG-1 — AIR SAMPLE LOCATION (SEC 2018)
- FAN-1 — IRAM FAN LOCATION (SEC 2017-2018)
- LOCATION OF FORMER DRY-CLEANING OPERATION
- SANITARY SEWER LOCATION

N
N

(APPROXIMATE SCALE IN FEET)

35

SITE PLAN BASED ON OBSERVATIONS MADE BY SEC. MEASUREMENTS DERIVED FROM THIS FIGURE SHOULD BE CONSIDERED APPROXIMATE.

SITE PLAN - OVERALL LAYOUT

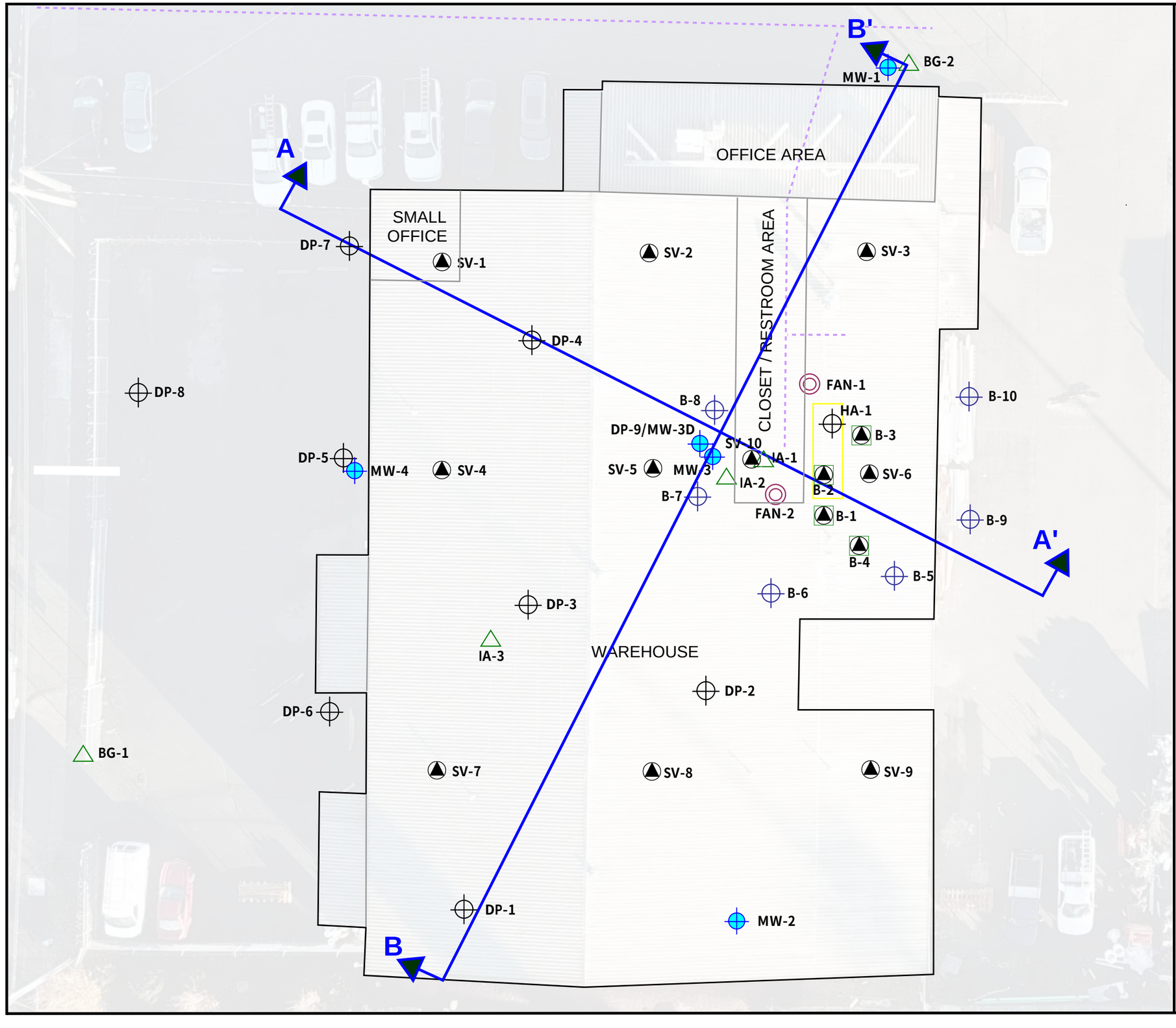
6707 - 6709 S ADAMS STREET
TACOMA, WASHINGTON

FIGURE 2

HE-1-01

OCTOBER 2018

SUCCEED ENVIRONMENTAL CONSULTING, LLC



LEGEND:

- BUILDING LAYOUT
- MW-1 — WELL LOCATION
- B-5 — BORING LOCATION (AEG 2016)
- DP-1 — BORING LOCATION (SEC 2018)
- B-1 — SOIL GAS SAMPLE LOCATION (AEG 2016)
- SV-1 — SOIL GAS SAMPLE LOCATION (SEC 2017-2018)
- IA-1 / BG-1 — AIR SAMPLE LOCATION (SEC 2018)
- FAN-1 — IRAM FAN LOCATION (SEC 2017-2018)
- LOCATION OF FORMER DRY-CLEANING OPERATION
- SANITARY SEWER LOCATION
- A / A' — CROSS SECTION LINE (SEE FIGURE XXX.XXX)

N

(APPROXIMATE SCALE IN FEET)

35

SITE PLAN BASED ON OBSERVATIONS MADE BY SEC. MEASUREMENTS DERIVED FROM THIS FIGURE SHOULD BE CONSIDERED APPROXIMATE.

SITE PLAN - OVERALL LAYOUT

6707 - 6709 S ADAMS STREET
TACOMA, WASHINGTON

FIGURE 3

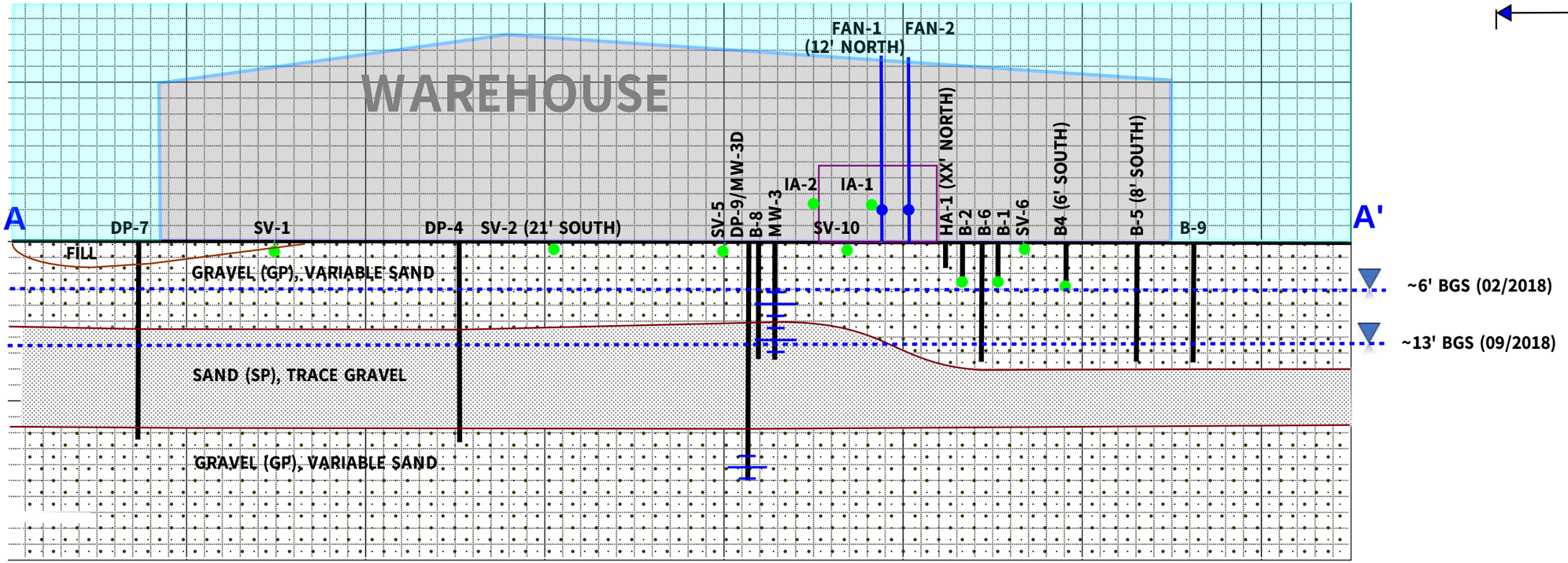
HE-1-01

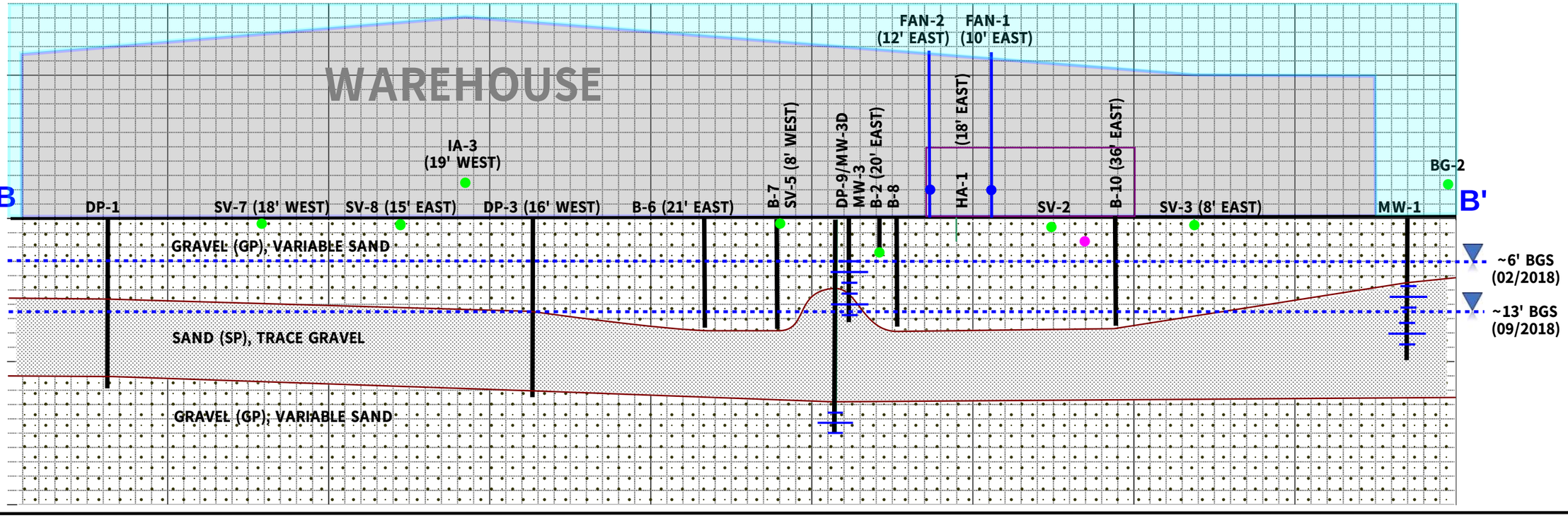
OCTOBER 2018

SUCCEED ENVIRONMENTAL CONSULTING, LLC

(APPROXIMATE SCALE IN FEET)

25





CROSS SECTIONS A-A' AND B-B'

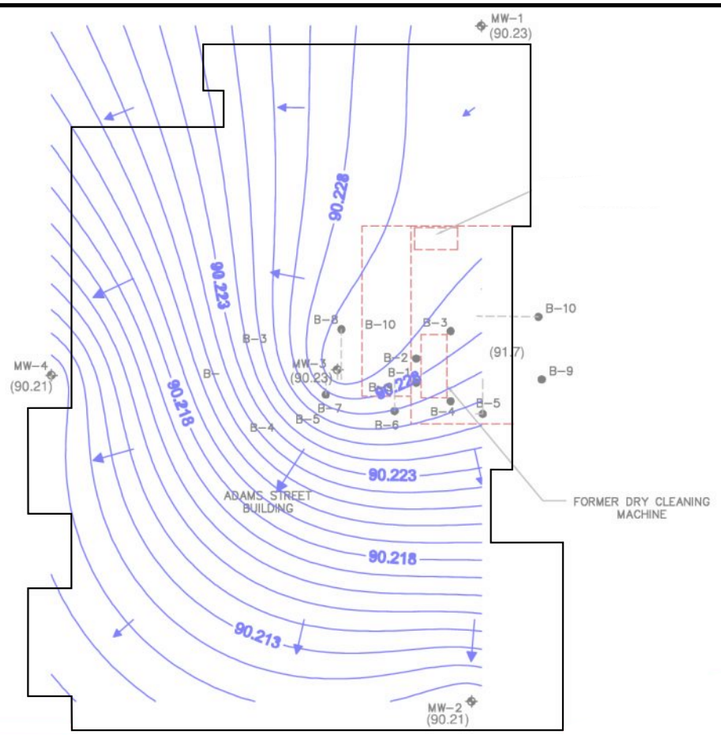
6707 - 6709 S ADAMS STREET
TACOMA, WASHINGTON

FIGURE 4

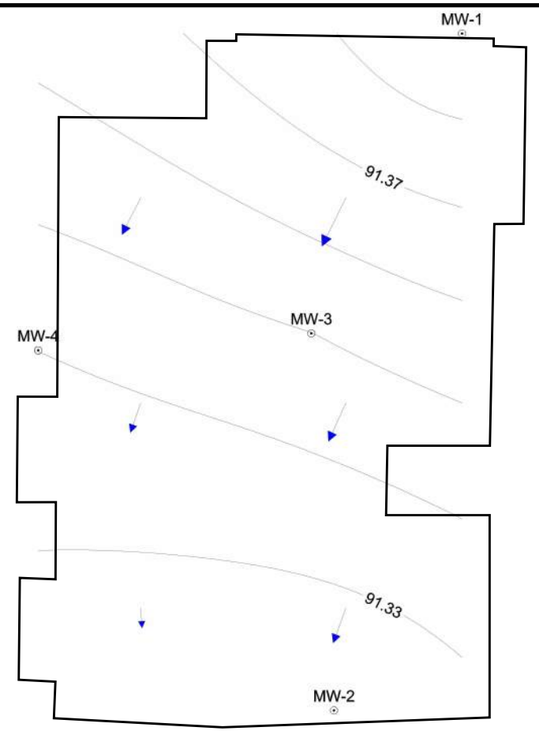
HE-1-01

OCTOBER 2018

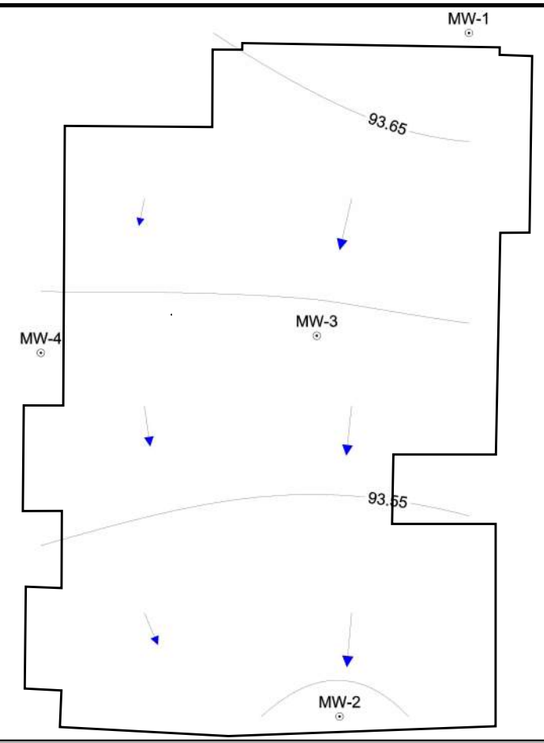
SUCCEED ENVIRONMENTAL CONSULTING, LLC



APRIL 2016 (AEG)



NOVEMBER 2017 (SEC)



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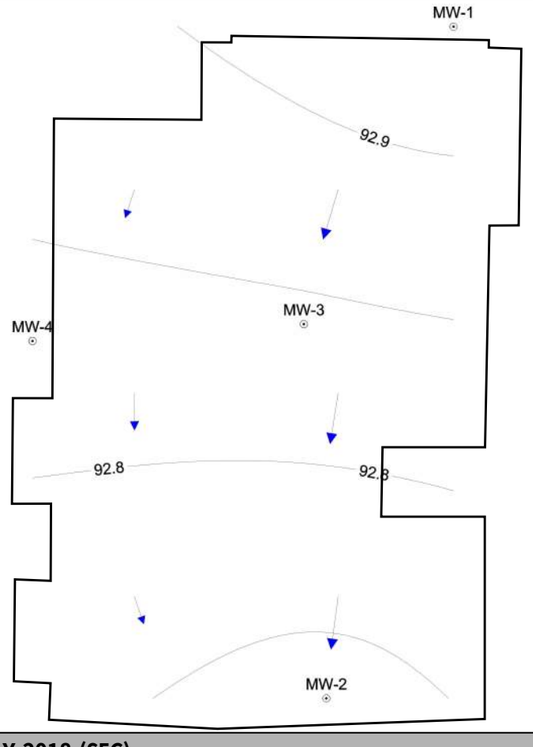
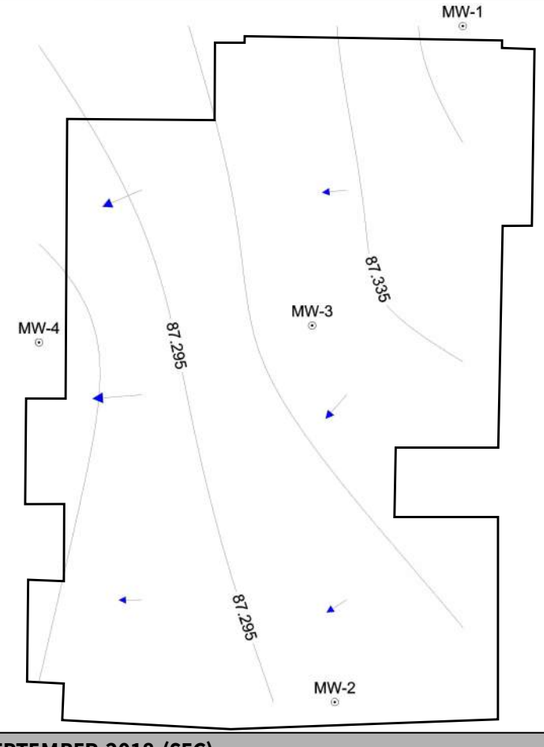


MAY 2018 (SEC)



SEPTEMBER 2018 (SEC)

LEGEND:

APPROXIMATE BUILDING LAYOUT

87.3 — APPROXIMATE GROUNDWATER ISOCONTOURS (ELEVATION NOTED)

INFERRED GROUNDWATER FLOW DIRECTION

MW-4 — APPROXIMATE WELL LOCATION

N
N

(APPROXIMATE SCALE IN FEET)

75

SITE PLAN BASED ON OBSERVATIONS MADE BY SEC.
MEASUREMENTS DERIVED FROM THIS FIGURE
SHOULD BE CONSIDERED APPROXIMATE.

SITE PLAN - GROUNDWATER CONTOURS AND ELEVATIONS

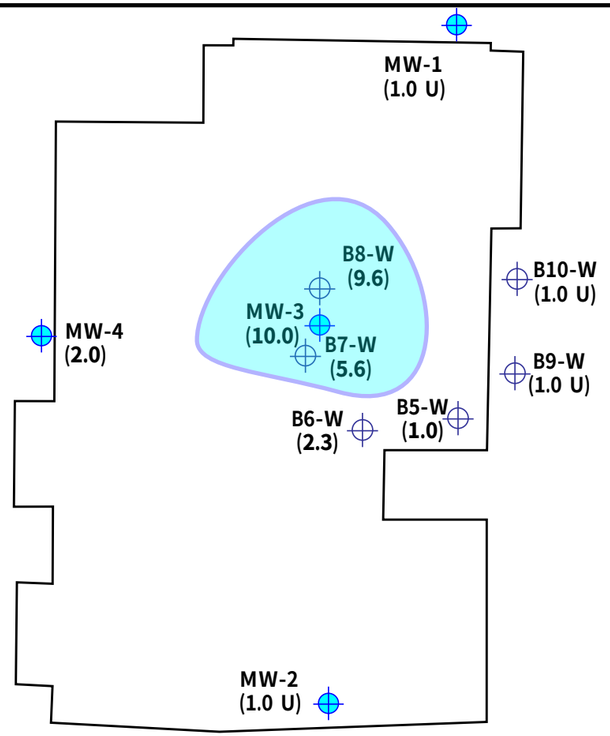
6707 - 6709 S ADAMS STREET
TACOMA, WASHINGTON

FIGURE 5

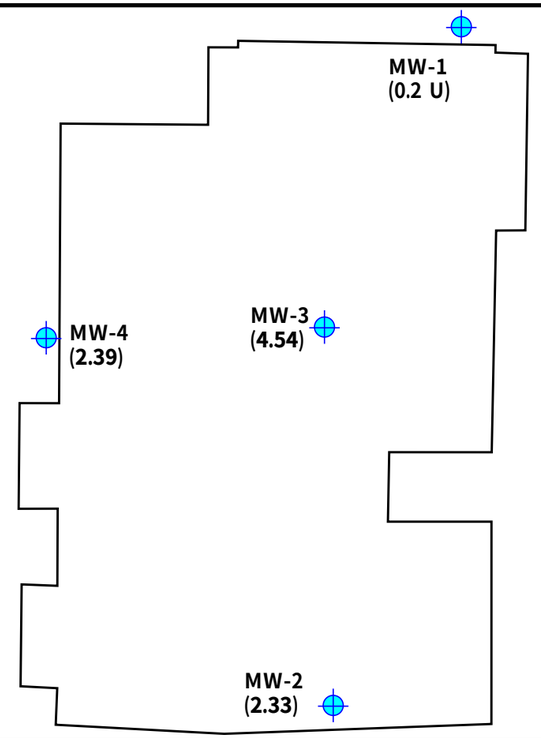
HE-1-01

OCTOBER 2018

SUCCEED ENVIRONMENTAL CONSULTING, LLC



JANUARY THROUGH MARCH 2016 (AEG)



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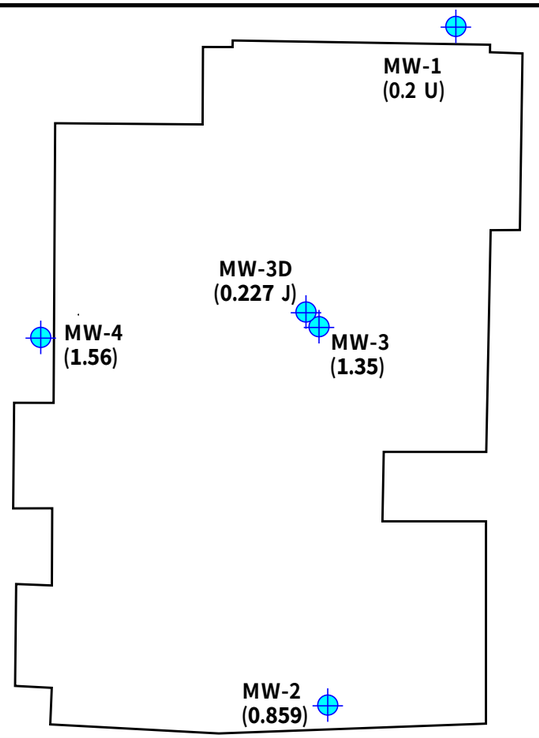

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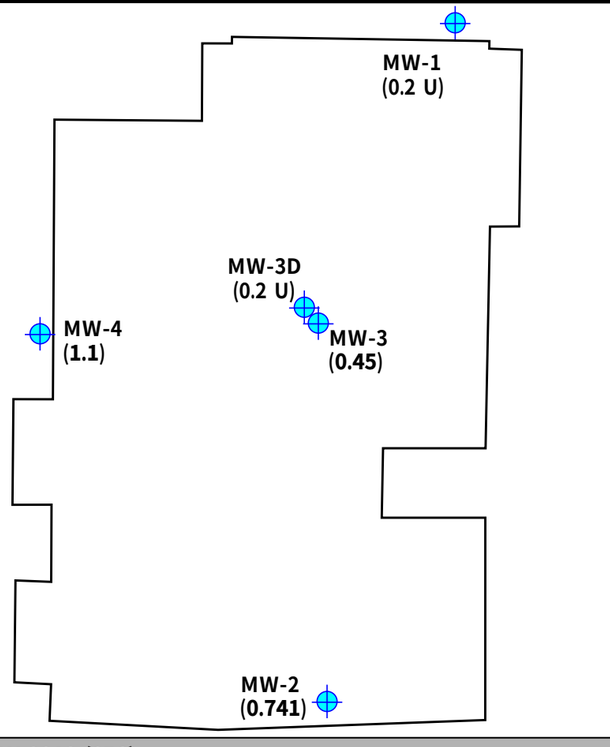

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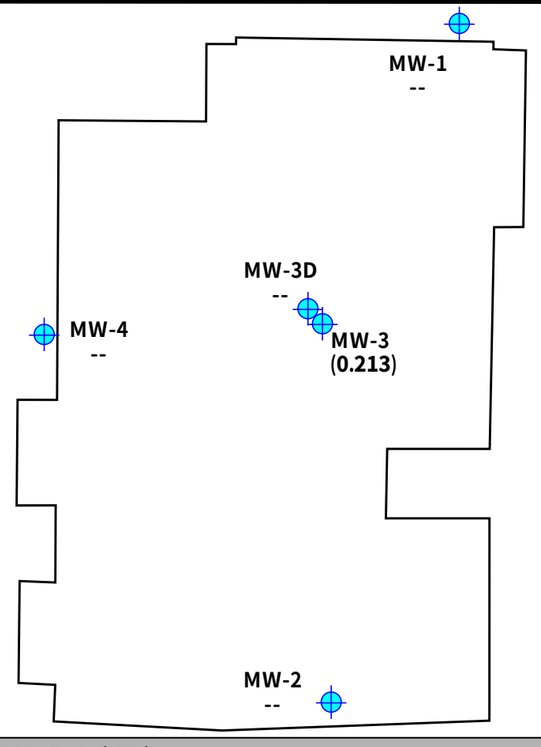


SEPTEMBER 2018 (SEC)

LEGEND:

BUILDING LAYOUT

MW-1 (0.45) — WELL LOCATION (PCE CONCENTRATION UG/L)

B5-W (0.45) — 2016 GRAB GROUNDWATER SAMPLE (PCE CONCENTRATION UG/L)

HISTORICAL EXTENT OF PCE IN GROUNDWATER DETECTED AT A CONCENTRATION EXCEEDING THE MTCA METHOD A CUL (5.0 UG/L)

N
N

(APPROXIMATE SCALE IN FEET)

75

SITE PLAN BASED ON OBSERVATIONS MADE BY SEC. MEASUREMENTS DERIVED FROM THIS FIGURE SHOULD BE CONSIDERED APPROXIMATE.

SITE PLAN - PCE DETECTED IN GROUNDWATER

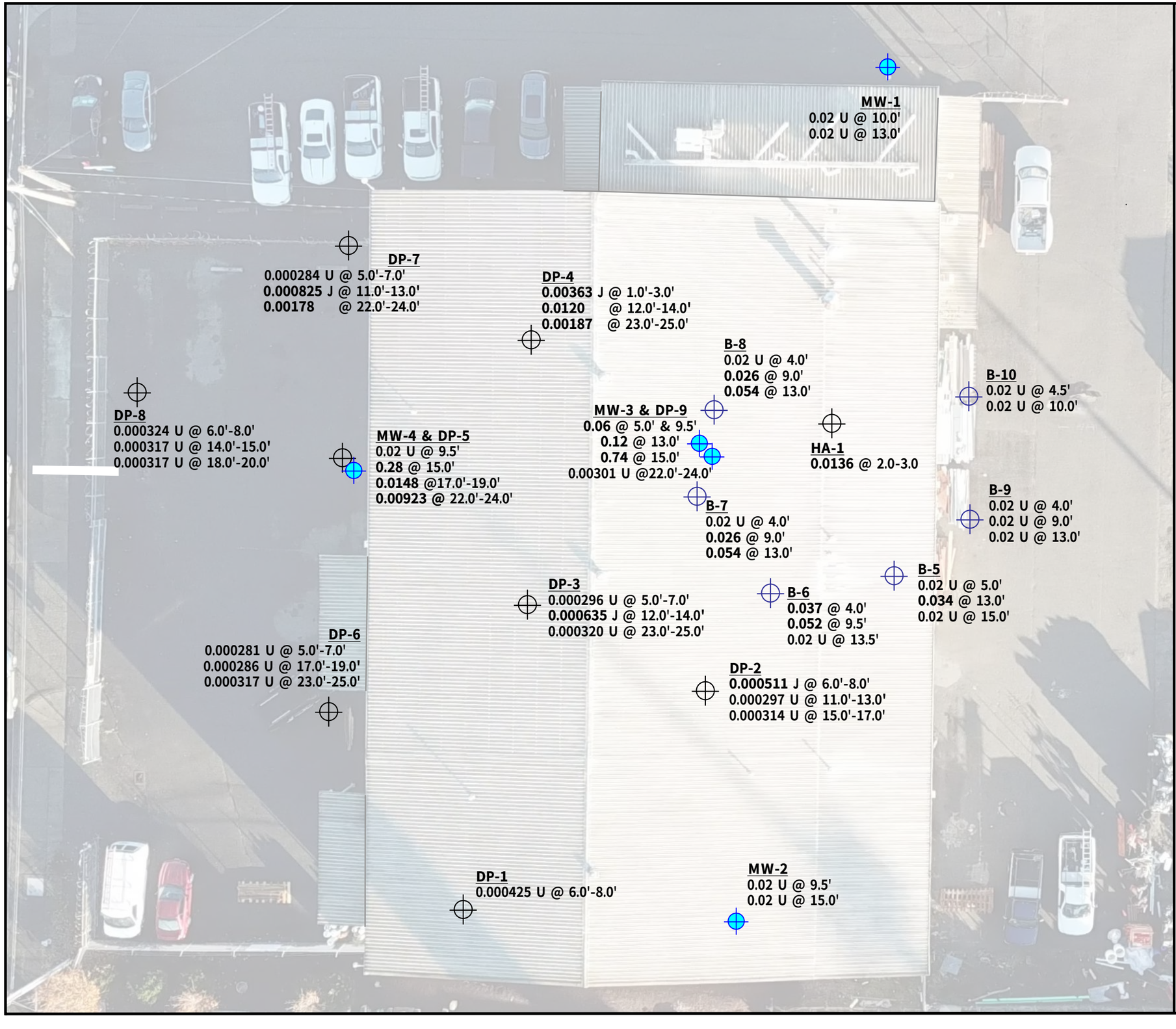
6707 - 6709 S ADAMS STREET
TACOMA, WASHINGTON

FIGURE 6

HE-1-01

OCTOBER 2018

SUCCEED ENVIRONMENTAL CONSULTING, LLC



LEGEND:

- BUILDING LAYOUT
- MW-1 — WELL LOCATION
- B-5 — BORING LOCATION (AEG 2016)
- DP-1 — BORING LOCATION (SEC 2018)

Sample I.D.	Depth (feet BGS)	Results (mg/kg)
B5-5	5.0	0.02 U
B5-13	13.0	**0.034**
B5-15	15.0	0.02 U
B6-4	4.0	**0.037**
B6-9.5	9.5	**0.052**
B6-13.5	13.5	0.02 U
B7-4	4.0	0.02 U
B7-9	9.0	**0.026**
B7-13	13.0	**0.054**
B8-4	4.0	**0.037**
B8-9.5	9.5	**0.034**
B8-13.5	13.5	**0.14**
B9-4	4.0	0.02 U
B9-9	9.0	0.02 U
B9-13	13.0	0.02 U
B10-4.5	4.5	0.02 U
B10-10	10.0	0.02 U
MW1-10	10.0	0.02 U
MW1-13	13.0	0.02 U
MW2-9.5	9.5	0.02 U
MW2-15	15.0	0.02 U
MW3-5	5.0	**0.06**
MW3-9.5	9.5	**0.06**
MW3-13	13.0	**0.12**
MW3-15	15.0	**0.74**
MW4-9.5	9.5	0.02 U
MW4-15	15.0	**0.28**
HA-1(2.0-3.0)	2.0-3.0	**0.0136**
DP-1 (6.0-8.0)	6.0-8.0	0.000425 U
DP-2 (6.0-8.0)	6.0-8.0	**0.000511 J**
DP-2 (11.0-13.0)	11.0-13.0	0.000297 U
DP-2(15.0-17.0)	15.0-17.0	0.000314 U
DP-3 (5.0-7,0)	5.0-7.0	0.000296 U
DP-3 (12.0-14.0)	12.0-14.0	**0.000635 J**
DP-3 (23.0-25.0)	23.0-25.0	0.000320 U
DP-4 (1.0-3.0)	1.0-3.0	**0.000363 J**
DP-4 (12.0-14.0)	12.0-14.0	**0.0120**
DP-4 (23.0-25.0)	23.0-25.0	**0.00187**
DP-5 (17.0-19.0)	17.0-19.0	**0.0148**
DP-5 (23.0-25.0)	23.0-25.0	**0.00923**
DP-6 (5.0-7.0)	5.0-7.0	0.000281 U
DP-6 (17.0-19.0)	17.0-19.0	0.000286 U
DP-6 (23.0-25.0)	23.0-25.0	0.000317 U
DP-7(5.0-7.0)	5.0-7.0	0.000284 U
DP-7 (11.0-13.0)	11.0-13.0	**0.000825 J**
DP-7 (22.0-24.0)	22.0-24.0	**0.0178**
DP-8 (6.0-8.0)	6.0-8.0	0.000324 U
DP-8 (14.0-15.0)	14.0-15.0	0.000317 U
DP-8 (18.0-20.0)	18.0-20.0	0.000317 U
DP-9 (24.0-26.0)	24.0-26.0	0.000301 U
Site-Specific CUL (See Section 4.3)		0.74

N
N

(APPROXIMATE SCALE IN FEET)

35

SITE PLAN BASED ON OBSERVATIONS MADE BY SEC. MEASUREMENTS DERIVED FROM THIS FIGURE SHOULD BE CONSIDERED APPROXIMATE.

SITE PLAN - PCE DETECTED IN SOIL

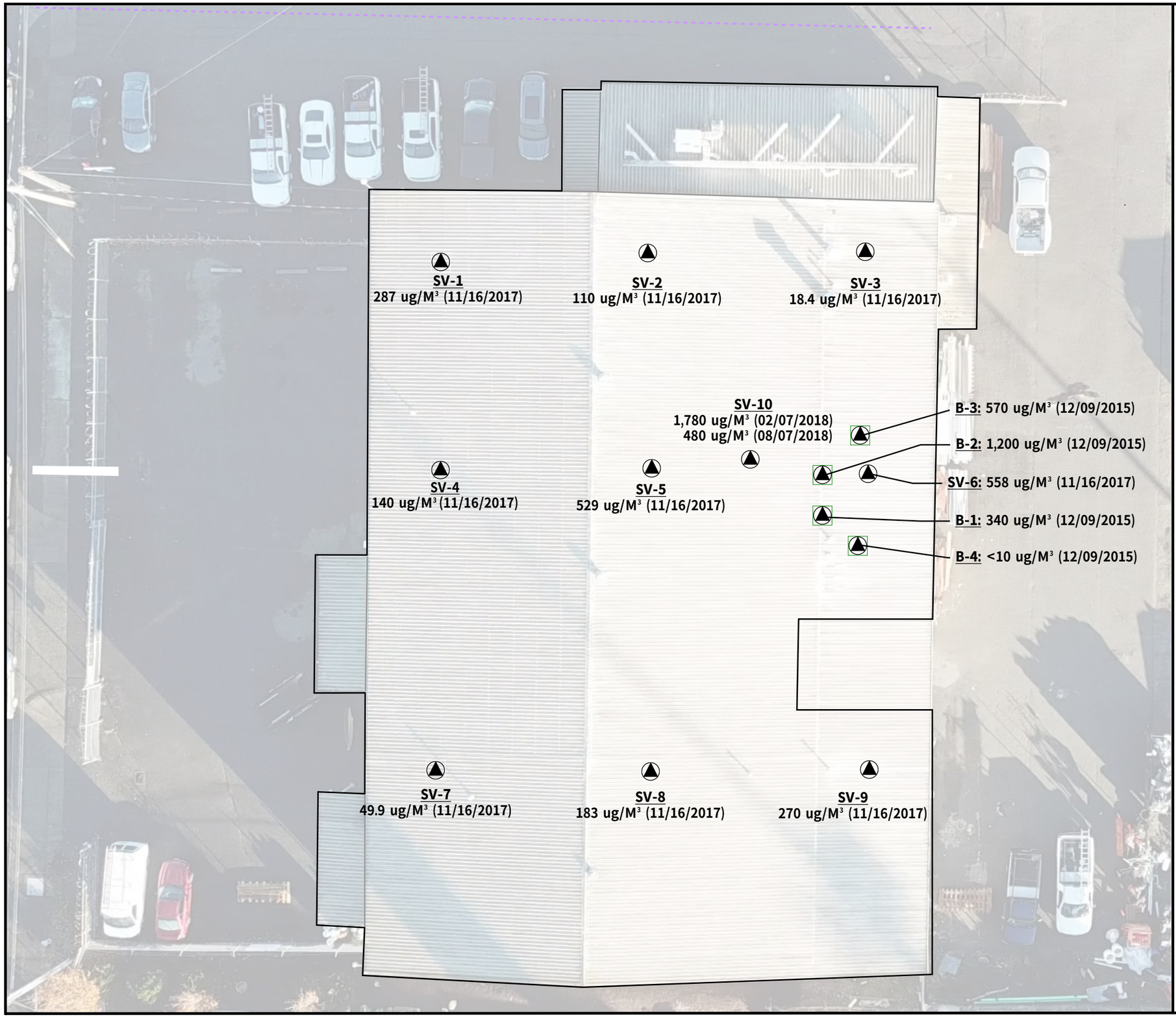
6707 - 6709 S ADAMS STREET
TACOMA, WASHINGTON

FIGURE 7

HE-1-01

OCTOBER 2018

SUCCEED ENVIRONMENTAL CONSULTING, LLC



LEGEND:

BUILDING LAYOUT

B-1 SOIL GAS SAMPLE LOCATION (AEG 2016)

SV-1 SOIL GAS SAMPLE LOCATION (SEC 2017-2018)

Sample I.D.	Sample Date	Results (µg/m³)
B-1	12/09/15	**340**
B-2	12/09/15	**1,200**
B-3	12/09/15	**570**
B-4	12/09/15	10 U
SV-1	11/16/17	**287**
SV-2	11/16/17	**110**
SV-3	11/16/17	**18.4**
SV-4	11/16/17	**140**
SV-5	11/16/17	**529**
SV-6	11/16/17	**558**
SV-7	11/16/17	**49.9**
SV-8	11/16/17	**183**
SV-9	11/16/17	**270**
SV-10	02/07/18	**1,780**
	08/07/18	**480**
Site-Specific CUL (Section 4.5)		13,333

N
N

(APPROXIMATE SCALE IN FEET)

35

SITE PLAN BASED ON OBSERVATIONS MADE BY SEC. MEASUREMENTS DERIVED FROM THIS FIGURE SHOULD BE CONSIDERED APPROXIMATE.

SITE PLAN - PCE DETECTED IN SOIL GAS

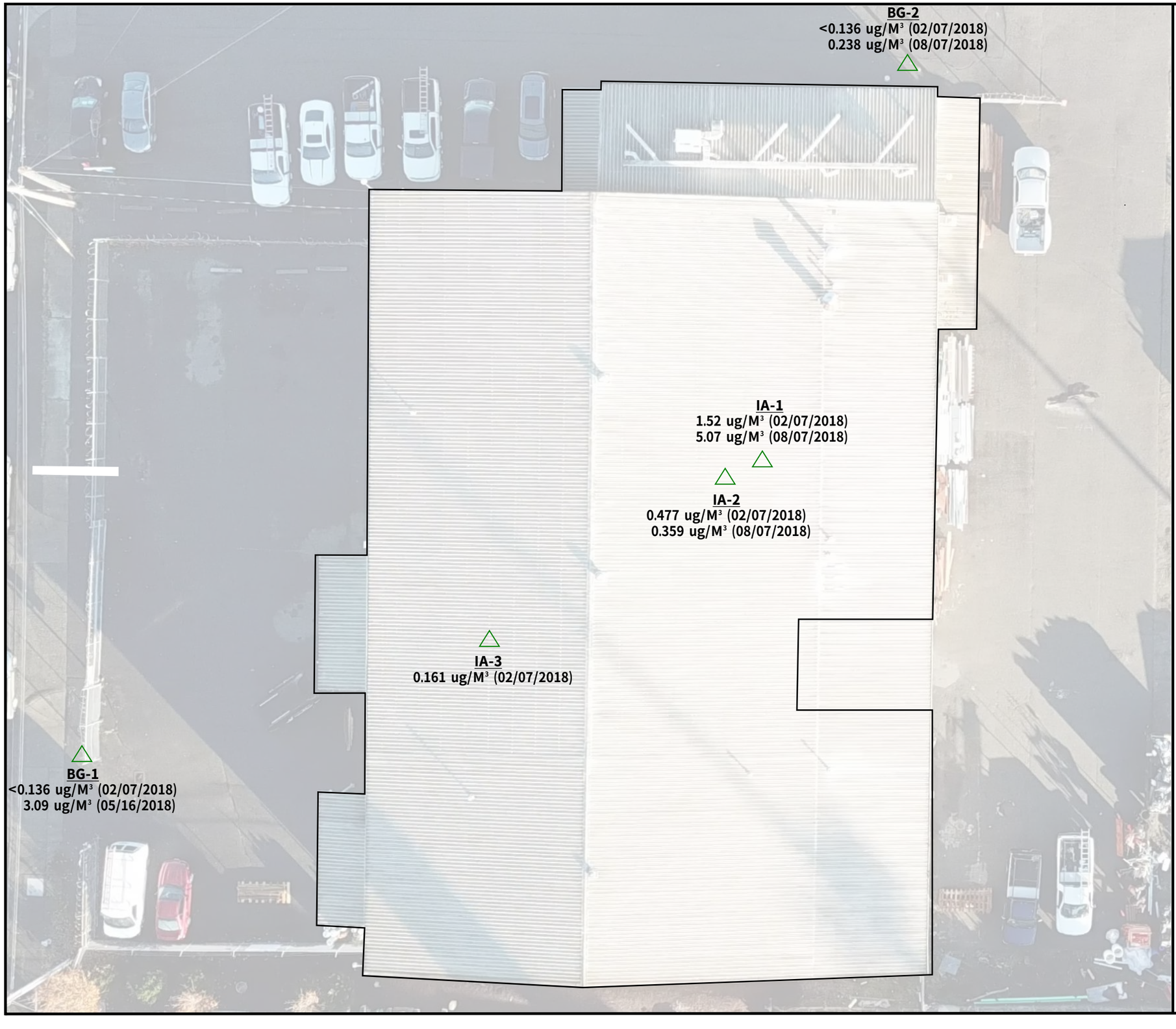
6707 - 6709 S ADAMS STREET
TACOMA, WASHINGTON

FIGURE 8

HE-1-01

OCTOBER 2018

SUCCEED ENVIRONMENTAL CONSULTING, LLC



LEGEND:

BUILDING LAYOUT

IA-1 / BG-1 — AIR SAMPLE LOCATION (SEC 2018)

Sample I.D.	Sample Date	Results (µg/m³)
IA-1	02/07/18	**1.52**
	05/16/18	**5.07**
IA-2	02/07/18	**0.477**
	08/07/18	**0.359**
IA-3	02/07/18	0.136 U
BG-1	02/07/18	0.136 U
	05/16/18	**3.09**
BG-2	02/07/18	0.136 U
	08/07/18	**0.238**
MTCA Method C SL - NC		40
MTCA Method C SL -C		96.2

N
N

(APPROXIMATE SCALE IN FEET)

35

SITE PLAN BASED ON OBSERVATIONS MADE BY SEC. MEASUREMENTS DERIVED FROM THIS FIGURE SHOULD BE CONSIDERED APPROXIMATE.

SITE PLAN - PCE DETECTED IN AMBIENT AIR

6707 - 6709 S ADAMS STREET
TACOMA, WASHINGTON

FIGURE 9

HE-1-01

OCTOBER 2018

SUCCEED ENVIRONMENTAL CONSULTING, LLC

TABLES

TABLE 1
Summary of Groundwater Elevations and Purge Stabilization Parameters
6707 S Adams Street
Tacoma, Washington

Sample I.D.	Screened Interval (feet BGS)	Date	Time	Depth to Water (Feet)	Groundwater Elevation	pH	ORP (mV)	DO (mg/L)
				Results				
MW-1	9.0 - 19.0	11/16/17	12:57	8.06	91.39	--	--	--
			17:10	8.06	91.39	--	--	--
			17:15	--	--	6.50	13.2	6.0
			17:20	--	--	6.50	10.3	6.0
			17:25	--	--	6.50	11.6	6.0
			17:30	--	--	6.50	12.0	6.0
			17:35	--	--	6.50	10.5	6.0
		02/01/18	9:55	5.77	93.68	--	--	--
			10:24	--	--	6.70	12.8	6.0
			10:33	--	--	6.70	11.9	6.0
			10:40	--	--	6.60	11.8	6.0
			10:46	--	--	6.60	11.6	6.0
			10:51	--	--	6.60	11.7	6.0
		05/16/18	9:55	6.51	92.94	--	--	--
			14:00	--	--	7.00	--	--
			14:20	--	--	7.00	--	--
			14:40	--	--	7.10	--	--
		09/10/18	9:57	12.10	87.35	--	--	--
MW-2	6.0 - 16.0	11/16/17	12:53	8.63	91.32	--	--	--
			13:01	8.63	91.32	--	--	--
			15:15	--	--	6.50	16.5	6.0
			15:25	--	--	6.50	18.8	6.0
			15:30	--	--	6.50	22.5	6.0
			15:35	--	--	6.50	27.2	6.0
			15:45	--	--	6.50	34.0	6.0
			15:55	--	--	6.50	37.2	6.0
			16:05	--	--	6.50	28.0	6.0
		02/01/18	10:05	6.46	93.49	--	--	--
			12:56	--	--	6.40	30.9	10.7
			13:03	--	--	6.30	30.7	9.9
			13:12	--	--	6.20	30.7	9.9
			13:21	--	--	6.30	30.6	9.9
			13:37	--	--	6.20	30.7	9.8
			13:50	--	--	6.20	30.7	9.7
		05/16/18	9:51	7.22	92.73	--	--	--
			13:00	--	--	6.80	--	--
			13:20	--	--	6.90	--	--
			13:40	--	--	6.90	--	--
		09/10/18	8:54	12.65	87.30	--	--	--
MW-3	7.0 - 16.0	11/16/17	12:50	8.65	91.35	--	--	--
			14:45	8.65	91.35	--	--	--
			13:15	--	--	6.50	32.5	6.1
			13:35	--	--	6.50	32.8	6.1
			13:45	--	--	6.50	33.7	6.1
			13:55	--	--	6.50	33.6	6.1

TABLE 1
Summary of Groundwater Elevations and Purge Stabilization Parameters
6707 S Adams Street
Tacoma, Washington

Sample I.D.	Screened Interval (feet BGS)	Date	Time	Depth to Water (Feet)	Groundwater Elevation	pH	ORP (mV)	DO (mg/L)
				Results				
MW-3	7.0 - 16.0	11/16/17	14:05	--	--	6.50	42.2	6.1
			14:15	--	--	6.50	30.3	6.0
			14:25	--	--	6.50	37.7	6.0
			14:35	--	--	6.50	32.3	6.0
		02/01/18	10:07	6.41	93.59	--	--	--
			14:05	--	--	6.80	21.8	11.2
			14:17	--	--	6.60	25.5	9.8
			14:28	--	--	6.60	26.5	9.6
			14:49	--	--	6.60	25.6	9.6
			14:55	--	--	6.50	26.4	9.8
			15:30	--	--	6.60	26.3	9.3
			16:15	--	--	6.50	26.3	9.4
		02/13/18	--	6.54	93.46	--	--	--
		05/16/18	9:49	7.16	92.84	--	--	--
			12:20	--	--	7.10	--	--
			12:40	--	--	7.10	--	--
			13:00	--	--	7.00	--	--
		09/10/18	9:04	12.67	87.33	--	--	--
			9:05	--	--	6.80	--	--
			9:12	--	--	6.90	--	--
			9:20	--	--	6.80	--	--
MW-3D	27.5 - 30.0	02/13/18	--	6.49	93.55	--	--	--
		05/16/18	9:50	7.07	92.97	--	--	--
			11:20	--	--	6.70	--	--
			11:40	--	--	6.70	--	--
			12:00	--	--	6.80	--	--
		09/10/18	9:02	12.86	87.18	--	--	--
MW-4	12.0 - 17.0	11/16/17	12:55	8.32	91.34	--	--	--
			13:05	8.32	91.34	--	--	--
			16:15	8.32	91.34	--	--	--
			16:25	--	--	6.40	37.1	6.0
			16:30	--	--	6.50	44.5	6.0
			16:45	--	--	6.50	44.9	6.0
		02/01/18	9:30	6.07	93.59	--	--	--
			11:23	--	--	6.50	39.30	9.00
			11:36	--	--	6.40	39.30	9.20
			11:41	--	--	6.40	39.2	9.2
			11:49	--	--	6.50	39.2	9.4
			11:55	--	--	6.50	39.40	9.30
			12:05	--	--	6.40	39.30	9.20
		05/16/18	9:45	6.83	92.83	--	--	--
			10:00	--	--	7.10	--	--
			10:20	--	--	7.10	--	--
			10:40	--	--	7.00	--	--
		09/10/18	0:00	12.40	87.26	--	--	--

TABLE 2
Summary of Groundwater Sample Chemical Analytical Results
VOCs Detected by EPA Method 8260C and Potential Breakdown Products
6707 S Adams Street
Tacoma, Washington

Sample I.D.	Screened Interval (feet BGS)	Sample Date	Collected By	Chloroform	Tetrachloroethylene (PCE)	Trichloroethlyene (TCE)	cis-1,2-Dichloroethylene	trans-1,2-Dichloroethylene	Vinyl Chloride
				Results (ug/L)					
EB	NA	09/10/18	SEC	0.0860 U	0.199 U	0.153 U	0.0933 U	0.152 U	0.118 U
EB[1]		09/10/18	SEC	0.500 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
Trip Blank		NA	SEC	0.500 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
B5-W		01/15/16	AEG	--	**1.0**	1.0 U	1.0 U	1.0 U	0.2 U
B6-W		01/15/16	AEG	--	**2.3**	1.0 U	1.0 U	1.0 U	0.2 U
B7-W		01/15/16	AEG	--	**5.6**	1.0 U	1.0 U	1.0 U	0.2 U
B8-W		01/15/16	AEG	--	**9.6**	1.0 U		1.0 U	0.2 U
B9-W		01/15/16	AEG	--	1.0 U	1.0 U	1.0 U	1.0 U	0.2 U
B10-W		01/15/16	AEG	--	1.0 U	1.0 U	1.0 U	1.0 U	0.2 U
MW-1	9.0 - 19.0	03/17/16	AEG	--	1.0 U	1.0 U	1.0 U	1.0 U	0.2 U
MW-1		11/16/17	SEC	**4.32**	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
MW-1		02/01/18		**1.33**	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
MW-1 (DUP)		02/01/18		**1.32**	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
MW-1		05/16/18		**0.605**	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
MW-2	6.0 - 16.0	03/17/16	AEG	--	1.0 U	1.0 U	1.0 U	1.0 U	0.2 U
MW-2		11/16/17	SEC	0.500 U	**2.33**	0.200 U	0.500 U	0.500 U	0.200 U
MW-2		02/01/18		0.500 U	**0.859**	0.200 U	0.200 U	0.200 U	0.200 U
MW-2		05/16/18		0.500 U	**0.741**	0.200 U	0.200 U	0.200 U	0.200 U
MW-3	7.0 - 16.0	03/17/16	AEG	--	**10**	1.0 U	1.0 U	1.0 U	0.2 U
MW-3		11/16/17	SEC	0.500 U	**4.54**	0.200 U	0.500 U	0.500 U	0.200 U
MW-3		02/01/18		0.500 U	**1.35**	0.200 U	0.200 U	0.200 U	0.200 U
MW-3		05/16/18		0.500 U	**0.450**	0.200 U	0.200 U	0.200 U	0.200 U
MW-3		09/10/18		**0.203 J**	0.199 U	0.153 U	0.0933 U	0.152 U	0.118 U
MW-3[1]		09/10/18		0.500 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
MW-3 (DUP)		09/10/18		**0.284 J**	0.199 U	0.153 U	0.0933 U	0.152 U	0.118 U
MW-3 (DUP)[1]		09/10/18		0.500 U	**0.213**	0.200 U	0.200 U	0.200 U	0.200 U
MW-3D	27.5 - 30.0	02/13/18	SEC	**0.324 J**	**0.227 J**	0.153 U	0.0933 U	0.152 U	0.118 U
MW-3D		05/16/18		0.500 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
MW-4	12.0 - 17.0	03/17/16	AEG	--	**2.0**	1.0 U	1.0 U	1.0 U	0.2 U
MW-4		11/16/17	SEC	0.500 U	**2.39**	0.200 U	0.200 U	0.200 U	0.200 U
MW-4		02/01/18		0.500 U	**1.56**	0.200 U	0.200 U	0.200 U	0.200 U
MW-4		05/16/18		0.500 U	**1.10**	0.200 U	0.200 U	0.200 U	0.200 U
MW-4 (DUP)		05/16/18		0.500 U	**1.01**	0.200 U	0.200 U	0.200 U	0.200 U
MTCA Method A Cleanup Levels (Unrestricted Use)				NE	5.0	5.0	NE	NE	0.2
MTCA Method B Cleanup Levels (Cancer)				1.41	5.0	5.0	70	100	2.0

Notes:
1: Duplicate Sample
SEC: Succeed Environmental Consulting LLC
AEG: Associated Environmental Group, LLC
U: not detected at concentrations greater than the analytical laboratory RDL (reported)
--: not analyzed
Bolding indicates analyte was quantitatively detected at the reported concentration.
NE: not established
J: Analyte detected at a concentration greater than the laboratory MDL, but less than the MRL and is considered an estimate.

TABLE 3
Summary of Soil Sample Chemical Analytical Results
VOCs Detected by EPA Method 8260C and Potential Breakdown Products
6707 S Adams Street
Tacoma, Washington

Sample I.D.	Depth (feet BGS)	Sample Date	Collected By	Chloroform	1,1-Dichloroethene	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride
				Results (mg/kg)						
B5-5	5.0	01/15/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
B5-13	13.0	01/15/16	AEG	--	--	**0.034**	0.02 U	0.05 U	0.05 U	0.02 U
B5-15	15.0	01/15/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
B6-4	4.0	01/15/16	AEG	--	--	**0.037**	0.02 U	0.05 U	0.05 U	0.02 U
B6-9.5	9.5	01/15/16	AEG	--	--	**0.052**	0.02 U	0.05 U	0.05 U	0.02 U
B6-13.5	13.5	01/15/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
B7-4	4.0	01/15/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
B7-9	9.0	01/15/16	AEG	--	--	**0.026**	0.02 U	0.05 U	0.05 U	0.02 U
B7-13	13.0	01/15/16	AEG	--	--	**0.054**	0.02 U	0.05 U	0.05 U	0.02 U
B8-4	4.0	01/15/16	AEG	--	--	**0.037**	0.02 U	0.05 U	0.05 U	0.02 U
B8-9.5	9.5	01/15/16	AEG	--	--	**0.034**	0.02 U	0.05 U	0.05 U	0.02 U
B8-13.5	13.5	01/15/16	AEG	--	--	**0.14**	0.02 U	0.05 U	0.05 U	0.02 U
B9-4	4.0	01/15/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
B9-9	9.0	01/15/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
B9-13	13.0	01/15/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
B10-4.5	4.5	01/15/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
B10-10	10.0	01/15/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
MW1-10	10.0	02/23/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
MW1-13	13.0	02/23/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
MW2-9.5	9.5	02/23/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
MW2-15	15.0	02/23/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
MW3-5	5.0	02/23/16	AEG	--	--	**0.06**	0.02 U	0.05 U	0.05 U	0.02 U
MW3-9.5	9.5	02/23/16	AEG	--	--	**0.06**	0.02 U	0.05 U	0.05 U	0.02 U
MW3-13	13.0	02/23/16	AEG	--	--	**0.12**	0.02 U	0.05 U	0.05 U	0.02 U
MW3-15	15.0	02/23/16	AEG	--	--	**0.74**	0.03 U	0.06 U	0.06 U	0.02 U
MW4-9.5	9.5	02/23/16	AEG	--	--	0.02 U	0.02 U	0.05 U	0.05 U	0.02 U
MW4-15	15.0	02/23/16	AEG	--	--	**0.28**	0.02 U	0.05 U	0.05 U	0.02 U
HA-1(2.0-3.0)	2.0-3.0	05/16/18	SEC	--	0.000580	**0.0136**	0.000464	0.000801	0.00166 U	0.000792
DP-1 (6.0-8.0)	6.0-8.0	02/07/18	SEC	0.000352	0.000466	0.000425	0.000429	0.000362	0.000406	0.000448
DP-2 (6.0-8.0)	6.0-8.0	02/07/18	SEC	0.000234	0.000310	**0.000511 J**	0.000285	0.000240	0.000270	0.000298
DP-2 (11.0-13.0)	11.0-13.0	02/07/18	SEC	0.000246	0.000326	0.000297	0.000300	0.000253	0.000284	0.000313
DP-2(15.0-17.0)	15.0-17.0	02/07/18	SEC	0.000261	0.000345	0.000314	0.000318	0.000268	0.000301	0.000331
DP-3 (5.0-7,0)	5.0-7.0	02/07/18	SEC	0.000245	0.000325	0.000296	0.000299	0.000252	0.000283	0.000312
DP-3 (12.0-14.0)	12.0-14.0	02/07/18	SEC	0.000247	0.000327	**0.000635 J**	0.000301	0.000253	0.000285	0.000314
DP-3 (23.0-25.0)	23.0-25.0	02/07/18	SEC	0.000266	0.000352	0.000320	0.000324	0.000273	0.000306	0.000338
DP-4 (1.0-3.0)	1.0-3.0	02/07/18	SEC	0.000231	0.000306	**0.000363 J**	0.000282	0.000238	0.000267	0.000294
DP-4 (12.0-14.0)	12.0-14.0	02/07/18	SEC	0.000274	0.000363	**0.0120**	0.000334	0.000281	0.000316	0.000348
DP-4 (23.0-25.0)	23.0-25.0	02/07/18	SEC	0.000239	0.000317	**0.00187**	0.000292	0.000246	0.000276	0.000304
DP-5 (17.0-19.0)	17.0-19.0	02/07/18	SEC	0.000254	0.000336	**0.0148**	0.000310	0.000261	0.000293	0.000323
DP-5 (23.0-25.0)	23.0-25.0	02/07/18	SEC	0.000267	0.000353	**0.00923**	0.000325	0.000274	0.000308	0.000339
DP-6 (5.0-7.0)	5.0-7.0	02/07/18	SEC	0.000233	0.000308	0.000281	0.000284	0.000239	0.000269	0.000296
DP-6 (17.0-19.0)	17.0-19.0	02/07/18	SEC	0.000237	0.000314	0.000286	0.000289	0.000243	0.000273	0.000301
DP-6 (23.0-25.0)	23.0-25.0	02/07/18	SEC	0.000263	0.000348	0.000317	0.000320	0.000270	0.000303	0.000334
DP-7(5.0-7.0)	5.0-7.0	02/09/18	SEC	0.000236	0.000312	0.000284	0.000287	0.000242	0.000272	0.000299
DP-7 (11.0-13.0)	11.0-13.0	02/09/18	SEC	0.000269	0.000356	**0.000825 J**	0.000328	0.000276	0.000310	0.000342
DP-7 (22.0-24.0)	22.0-24.0	02/09/18	SEC	0.000248	0.000328	**0.0178**	0.000302	0.000255	0.000286	0.000315
DP-8 (6.0-8.0)	6.0-8.0	02/09/18	SEC	0.000269	0.000355	0.000324	0.000327	0.000276	0.000310	0.000341
DP-8 (14.0-15.0)	14.0-15.0	02/09/18	SEC	0.000263	0.000348	0.000317	0.000321	0.000270	0.000304	0.000335
DP-8 (18.0-20.0)	18.0-20.0	02/09/18	SEC	0.000263	0.000348	0.000317	0.000320	0.000270	0.000303	0.000334
DP-9 (24.0-26.0)	24.0-26.0	02/13/18	SEC	0.000250	0.000331	0.000301	0.000304	0.000256	0.000288	0.000317
MTCA Method A Cleanup Levels (Unrestricted Use)				NE	NE	See Below	0.03	NE	NE	NE
MTCA Method B Cleanup Levels (Cancer)				32.3	NE	See Below	12	NE	NE	NE
Site-Specific Cleanup Level (See Section 4.3 of RI)				NE	NE	0.74	NE	NE	NE	NE

Notes:
AEG: Associated Environmental Group, LLC
SEC: Succeed Environmental Consulting LLC
U: not detected at concentrations greater than the analytical laboratory RDL (reported)
--: not analyzed
Bolding indicates analyte was quantitatively detected at the reported concentration.
NE: not established
J: Analyte detected at a concentration greater
than the laboratory MDL, but less than the MRL.

TABLE 4
Summary of Vapor Sample Chemical Analytical Results
VOCs by EPA Method TO-15
6707 S Adams Street
Tacoma, Washington

Sample I.D.	Sample Type	Sample Date	Collected By	1,1-Dichloroethene	cis-1,2-Dichloroethylene	trans-1,2-Dichloroethylene	2-Propanol	Tetrachloroethylene (PCE)	Trichloroethlyene (TCE)	Vinyl Chloride
				Results (µg/m^3)						
B-1	Sub-Slab	12/09/15	AEG	--	10 U	10 U	--	**340**	10 U	10 U
B-2	Sub-Slab	12/09/15	AEG	--	10 U	10 U	--	**1,200**	10 U	10 U
B-3	Sub-Slab	12/09/15	AEG	--	10 U	10 U	--	**570**	10 U	10 U
B-4	Sub-Slab	12/09/15	AEG	--	10 U	10 U	--	10 U	10 U	10 U
SV-1	Sub-Slab	11/16/17	SEC	1.59 U	1.59 U	1.59 U	**13.2**	**287**	2.14 U	1.02 U
SV-2	Sub-Slab	11/16/17	SEC	1.59 U	1.59 U	1.59 U	6.15 U	**110**	2.14 U	1.02 U
SV-3	Sub-Slab	11/16/17	SEC	1.59 U	1.59 U	1.59 U	6.15 U	**18.4**	2.14 U	1.02 U
SV-4	Sub-Slab	11/16/17	SEC	1.59 U	1.59 U	1.59 U	6.15 U	**140**	2.14 U	1.02 U
SV-5	Sub-Slab	11/16/17	SEC	1.59 U	1.59 U	1.59 U	6.15 U	**529**	2.14 U	1.02 U
SV-6	Sub-Slab	11/16/17	SEC	1.59 U	1.59 U	1.59 U	**9,200**	**558**	**2.22**	1.02 U
SV-7	Sub-Slab	11/16/17	SEC	1.59 U	1.59 U	1.59 U	**27.5**	**49.9**	2.14 U	1.02 U
SV-8	Sub-Slab	11/16/17	SEC	1.59 U	1.59 U	1.59 U	**15.0**	**183**	2.14 U	1.02 U
SV-9	Sub-Slab	11/16/17	SEC	1.59 U	1.59 U	1.59 U	**13.5**	**270**	**3.70**	1.02 U
SV-10	Sub-Slab	02/07/18	SEC	1.59 U	1.59 U	1.59 U	6.15 U	**1,780**	2.14 U	1.02 U
		08/07/18	SEC	1.59 U	1.59 U	1.59 U	6.15 U	**480**	2.14 U	1.02 U
MTCA Method A Cleanup Levels				NE	NE	NE	NE	NE	NE	NE
MTCA Method B Screening Levels -C- (draft 2015)				NE	NE	NE	NE	See Below	12.3	9.33
Site-Specific Cleanup Level (See Section 4.5 of RI)				NE	NE	NE	NE	13,333	NE	NE

Notes:
AEG: Associated Environmental Group, LLC
SEC: Succeed Environmental Consulting LLC
NE: not established
U: not detected at concentrations greater than the analytical laboratory RDL (reported)
Bolding indicates analyte was quantitatively detected at the reported concentration.

TABLE 5
Summary of Ambient Air Sample Chemical Analytical Results
VOCs by EPA Method TO-15
6707 S Adams Street
Tacoma, Washington

Sample I.D.	Sample Type	Sample Date	Collected By	1,1-Dichloroethene	cis-1,2-Dichloroethylene	trans-1,2-Dichloroethylene	Tetrachloroethylene (PCE)	Trichloroethlyene (TCE)	Vinyl Chloride
				Results (µg/m^3)					
IA-1	Indoor Air	02/07/18	SEC	0.0793 U	0.0793 U	0.0793 U	**1.52**	**0.576**	0.0511 U
		05/16/18	SEC	0.0793 U	0.0793 U	0.0793 U	**5.07**	0.107 U	0.0511 U
IA-2	Indoor Air	02/07/18	SEC	0.0793 U	0.0793 U	0.0793 U	**0.477**	**0.405**	0.0511 U
		08/07/18	SEC	0.0793 U	0.0793 U	0.0793 U	**0.359**	0.107 U	0.0511 U
IA-3	Indoor Air	02/07/18	SEC	0.0793 U	0.0793 U	0.0793 U	0.136 U	**0.161**	0.0511 U
BG-1	Background	02/07/18	SEC	0.0793 U	0.0793 U	0.0793 U	0.136 U	0.107 U	0.0511 U
		05/16/18	SEC	0.0793 U	0.0793 U	0.0793 U	**3.09**	0.107 U	0.0511 U
BG-2	Background	02/07/18	SEC	0.0793 U	0.0793 U	0.0793 U	0.136 U	0.107 U	0.0511 U
		08/07/18	SEC	0.0793 U	0.0793 U	0.0793 U	**0.238**	0.107 U	0.0511 U
MTCA Method C Screening Levels -NC- (revised 2015)				200	NE	NE	40	2.00	100
MTCA Method C Screening Levels -C- (revised 2015)				NE	NE	NE	96.2	6.3	NE

Notes:
SEC: Succeed Environmental Consulting LLC
U: not detected at concentrations greater than the analytical laboratory RDL (reported)
Bolding indicates analyte was quantitatively detected at the reported concentration.
Shading indicates analyte was quantitatively detected at a concentration greater than one or more corresponding screening levels.
NE: not established

APPENDIX A

SEC observed subsurface explorations and obtained soil, groundwater, and vapor/air samples during this assessment. The soil encountered in the explorations was visually classified in general accordance with ASTM D 2488.

SOIL SAMPLING

Continuous soil samples were collected from the explorations. Soil samples obtained from the explorations were collected from a hand auger or from a 2-inch-diameter, 60-inch-long samplers lined with acrylic sleeves. Soil samples were placed in laboratory-supplied containers and immediately placed in an ice chest and kept cool until delivery to the laboratory. Standard chain-of-custody procedures were observed during transport of the samples to the laboratory.

SOIL SAMPLING

Continuous soil samples were collected from the explorations. Soil samples obtained from the explorations were collected from a hand auger or from a 2-inch-diameter, 60-inch-long samplers lined with acrylic sleeves. Soil samples were placed in laboratory-supplied containers and immediately placed in an ice chest and kept cool until delivery to the laboratory. Standard chain-of-custody procedures were observed during transport of the samples to the laboratory.

GROUNDWATER SAMPLING

Groundwater samples were collected from project site wells, as described in the RI. The groundwater samples were placed in laboratory-supplied containers and immediately placed in an ice chest and kept cool until delivery to the laboratory. Standard chain-of-custody procedures were observed during transport of the samples to the laboratory.

VAPOR/AMBIENT AIR SAMPLING

Vapor and air samples were collected during this investigation, as described in the RI. All vapor samples were placed in laboratory-supplied containers. Standard chain-of-custody procedures were observed during transport of the samples to the laboratory.

DECONTAMINATION

All sampling equipment used in the collection of samples was decontaminated prior to use. Decontamination was performed on all sample re-usable processing equipment that came into contact with sampling media, including tools, stainless steel implements, trowels, etc. Decontamination was performed prior to sampling each location using the following procedures:

1. Rinsed with tap water and scrubbed with a scrub brush until free of large particles (e.g., sediment or soil)
2. Washed with phosphate-free (Alconox™) detergent solution
3. Rinsed with tap water
4. Rinsed with distilled water

IDW

IDW has been stored on-site in 55-gallon drums. Disposal is pending. All associated disposal documentation will be provided to Ecology.

ASSOCIATED ENVIRONMENTAL GROUP, LLC

LOG OF BOREHOLE

PROJECT:	***Adams Street Bulding***	**JOB #** *15-171*	**BORING #** *B-5* **PAGE 1 OF 1**
Location:	*6707 South Adams Street, Tacoma, WA*	**Approximate Elevation:**	
Subcontractor / Driller:	**ESN/ Don**	**Equipment / Drilling Method:**	**Direct Push**
Date:	*January 15, 2016*	**Logged By:**	*B. Dilba*

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
	1 foot of concrete underlain by;		1			10:33	N/A			
			2							
			3							
	Gray, dry, dense, SANDY GRAVEL; fine to coarse gravel, medium to coarse sand	GP	4					0		
5			5		B5-5	10:35		0		
			6							
			7							
			8							
			9							
10	at 9.0 feet; moist		10			10:39		0		
			11							
			12							
		▽	13						No	
	Gray, wet, medium dense, SANDY GRAVEL; fine to medium gravel, fine to coarse sand		14		B5-13			0		
15			15		B5-15	10:48		0		
	TD = 15 Feet									

Explanation

- Sample Advance / Recovery
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

ASSOCIATED ENVIRONMENTAL GROUP, LLC

LOG OF BOREHOLE

PROJECT:	***Adams Street Bulding***	**JOB #** *15-171*	**BORING #** *B-6* **PAGE 1 OF 1**
Location:	*6707 South Adams Street, Tacoma, WA*	**Approximate Elevation:**	
Subcontractor / Driller:	**ESN/ Don**	**Equipment / Drilling Method:**	**Direct Push**
Date:	*January 15, 2016*	**Logged By:**	*B. Dilba*

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
	1 foot of concrete underlain by;		1			11:28	N/A			
			2							
			3							
	Gray, dry, dense, SANDY GRAVEL; fine to coarse gravel, medium to coarse sand	GP	4					0		
5			5		B6-4	11:30		0		
			6							
			7							
			8							
			9							
10	at 9.0 feet; moist		10		B6-9	11:34		0		
			11							
			12							
		▽	13						No	
	Brown, wet, medium stiff, SILT	ML	14		B6-13					
15	Gray, wet, medium dense, SANDY GRAVEL; fine to medium gravel, fine to coarse sand	GP	15			11:42		0		
	TD = 15 Feet									

Explanation

- Sample Advance / Recovery
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

ASSOCIATED ENVIRONMENTAL GROUP, LLC

LOG OF BOREHOLE

PROJECT:	***Adams Street Bulding***	**JOB #** *15-171*	**BORING #** *B-7* **PAGE 1 OF 1**
Location:	*6707 South Adams Street, Tacoma, WA*	**Approximate Elevation:**	
Subcontractor / Driller:	**ESN/ Don**	**Equipment / Drilling Method:**	**Direct Push**
Date:	*January 15, 2016*	**Logged By:**	*B. Dilba*

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
	1 foot of concrete underlain by;		1			12:19	N/A			
			2							
			3							
	Gray, dry, dense, SANDY GRAVEL; fine to coarse gravel, medium to coarse sand	GP	4							
5			5		B7-4	12:20		0		
			6							
			7							
			8							
			9		B7-9			0		
10	at 9.0 feet; moist		10			12:26				
			11							
		▽	12							
	Brown, wet, medium dense, SANDY GRAVEL; fine to medium gravel, fine to coarse sand	GP	13						No	
			14		B7-13			0		
15			15			12:32				
	TD = 15 Feet									

Explanation

- Sample Advance / Recovery
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

ASSOCIATED ENVIRONMENTAL GROUP, LLC

LOG OF BOREHOLE

PROJECT:	***Adams Street Bulding***	**JOB #** *15-171*	**BORING #** *B-8* **PAGE 1 OF 1**
Location:	*6707 South Adams Street, Tacoma, WA*	**Approximate Elevation:**	
Subcontractor / Driller:	**ESN/ Don**	**Equipment / Drilling Method:**	**Direct Push**
Date:	*January 15, 2016*	**Logged By:**	*B. Dilba*

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
	1 foot of concrete underlain by;		1			13:01	N/A			
			2							
			3							
	Gray, dry, dense, SANDY GRAVEL; fine to coarse gravel, medium to coarse sand	GP	4							
5			5		B8-4	13:03		0		
			6							
			7							
			8							
			9							
10	at 9.5 feet; moist		10		B8-9.5	13:06		0		
			11							
			12							
		▽	13						No	
	Gray, wet, medium dense, SANDY GRAVEL; fine to medium gravel, fine to coarse sand	GP	14		B8-13.5					
15			15			13:11		0		
	TD = 15 Feet									

Explanation

- Sample Advance / Recovery
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

ASSOCIATED ENVIRONMENTAL GROUP, LLC

LOG OF BOREHOLE

PROJECT:	***Adams Street Bulding***	**JOB #** *15-171*	**BORING #** *B-9* **PAGE 1 OF 1**
Location:	*6707 South Adams Street, Tacoma, WA*	**Approximate Elevation:**	
Subcontractor / Driller:	**ESN/ Don**	**Equipment / Drilling Method:**	**Direct Push**
Date:	*January 15, 2016*	**Logged By:**	*B. Dilba*

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
	6 inches of asphalt underlain by;		1			13:47	N/A			
			2							
			3							
	Gray, dry, dense, SANDY GRAVEL; fine to coarse gravel, medium to coarse sand	GP	4							
5			5		B9-4	13:48		0		
			6							
			7							
			8							
			9							
10	at 9.0 feet; moist		10		B9-9	13:52		0		
			11							
			12							
		▽	13						No	
	Gray, wet, medium dense, SANDY GRAVEL; fine to medium gravel, fine to coarse sand	GP	14		B9-13					
15			15			13:56		0		
	TD = 15 Feet									

Explanation

- Sample Advance / Recovery
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

ASSOCIATED ENVIRONMENTAL GROUP, LLC

LOG OF BOREHOLE

PROJECT:	***Adams Street Bulding***	**JOB #** *15-171*	**BORING #** *B-10* **PAGE 1 OF 1**
Location:	*6707 South Adams Street, Tacoma, WA*	**Approximate Elevation:**	
Subcontractor / Driller:	**ESN/ Don**	**Equipment / Drilling Method:**	**Direct Push**
Date:	*January 15, 2016*	**Logged By:**	*B. Dilba*

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
	6 inches of asphalt underlain by;		1			14:18	N/A			
			2							
			3							
			4							
5	Gray, dry, dense, SANDY GRAVEL; fine to coarse gravel, medium to coarse sand	GP	5		B10-4.5	14:20		0		
			6							
			7							
			8							
			9							
10	at 9.0 feet; moist		10		B10-10	14:23		0		
			11							
			12							
		▽	13						No	
	Gray, wet, medium dense, SANDY GRAVEL; fine to medium gravel, fine to coarse sand	GP	14							
15			15			14:28		0		
	TD = 15 Feet									

Explanation

- Sample Advance / Recovery
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

ASSOCIATED ENVIRONMENTAL GROUP, LLC

LOG OF BOREHOLE

PROJECT: *Adams Street Bulding*	**JOB #** *15-171*	**BORING #** *MW-1*	**PAGE 1 OF 1**
Location: *6707 South Adams Street, Tacoma, WA*	**Approximate Elevation:**		
Subcontractor / Driller: ESN/ Don	**Equipment / Drilling Method: Direct Push**		
Date: *February 23, 2016*	**Logged By:** *B. Dilba*		

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well Construction
	6 inches of asphalt underlain by;					9:33	N/A	N/A		
	Brown, moist, medium dense, SANDY GRAVEL; fine to medium gravel, coarse sand	GP								
5					MW1-5	9:35			No	
10	Brown, wet, medium dense, SAND W/ GRAVEL; fine to coarse grain sand, fine gravel	SP			MW1-10	9:40				
	Gray, wet, medium dense, SAND; medium to coarse sand	SP								
15					MW1-13	9:46				
					MW1-18					
20						9:55				
	TD = 20									

Explanation

- Sample Advance / Recovery
- No Recovery
- Contact located approximately
- ATD Groundwater level at time of drilling or date of measurement

Monitoring Well Construction

- Grout/Concrete 2' to 1'
- 3/4-inch bentonite chips 7' to 2'
- Silica sand 19' to 7'
- 2-inch diameter blank PVC casing from 9' to 0'
- 2-inch diameter PVC 0.01 slotted screen 9' to 19'

Ecology Tag #

ASSOCIATED ENVIRONMENTAL GROUP, LLC

LOG OF BOREHOLE

PROJECT: ***Adams Street Bulding***	**JOB #** *15-171*	**BORING #** *MW-2*	**PAGE 1 OF 1**
Location: *6707 South Adams Street, Tacoma, WA*	**Approximate Elevation:**		
Subcontractor / Driller: ESN/ Don	**Equipment / Drilling Method: Direct Push**		
Date: *February 23, 2016*	**Logged By:** *B. Dilba*		

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well Construction
	12" inches of concrete underlain by;					11:33	N/A	N/A		
5	Brown, dry, medium dense, SANDY GRAVEL; fine to medium gravel, coarse sand	GP			MW2-5	11:35				
10	at 9.5 feet: wet	▽			MW2-9.5	11:39			No	
15					MW2-15	11:44				
20	Gray, wet, medium dense, SAND; medium to coarse sand	SP			MW2-19	11:57				
25	TD = 20									

Explanation

- Sample Advance / Recovery
- No Recovery
- Contact located approximately
- ATD ▽ Groundwater level at time of drilling or date of measurement

Monitoring Well Construction

- Grout/Concrete 2' to 1'
- 3/4-inch bentonite chips 4' to 2'
- Silica sand 16' to 4'
- 2-inch diameter blank PVC casing from 6' to 2'
- 2-inch diameter PVC 0.01 slotted screen 16' to 6'

Ecology Tag #

ASSOCIATED ENVIRONMENTAL GROUP, LLC

LOG OF BOREHOLE

PROJECT: ***Adams Street Bulding***	**JOB #** *15-171*	**BORING #** *MW-3*	**PAGE 1 OF 1**
Location: *6707 South Adams Street, Tacoma, WA*	**Approximate Elevation:**		
Subcontractor / Driller: ESN/ Don	**Equipment / Drilling Method: Direct Push**		
Date: *February 23, 2016*	**Logged By:** *B. Dilba*		

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well Construction
	12" inches of concrete underlain by;									
5	Brown, dry, dense, SANDY GRAVEL; fine to coarse gravel, medium to coarse sand	GP								
10	Browm, wet, medium dense, SAND with Gravel; fine to coarse	SP								
	Brown, wet medium dense, SAND; fine to medium sand	SP								
15	TD = 15 Feet									

Explanation

- Sample Advance / Recovery
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement (ATD)

Monitoring Well Construction

- Grout/Concrete 2' to 1'
- 3/4-inch bentonite chips 5' to 2'
- Silica sand 15' to 5'
- 2-inch diameter blank PVC casing from 7' to 0'
- 2-inch diameter PVC 0.01 slotted screen 16' to 7'

Ecology Tag #

ASSOCIATED ENVIRONMENTAL GROUP, LLC

LOG OF BOREHOLE

PROJECT: ***Adams Street Bulding***	**JOB #** *15-171*	**BORING #** *MW-4*	**PAGE 1 OF 1**
Location: *6707 South Adams Street, Tacoma, WA*	**Approximate Elevation:**		
Subcontractor / Driller: ESN/ Don	**Equipment / Drilling Method: Direct Push**		
Date: *February 23, 2016*	**Logged By:** *B. Dilba*		

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well Construction
	6" inches of asphalt underlain by;									
	Brown, dry, medium dense, SANDY GRAVEL; fine to coarse gravel, medium to coarse sand	GP								
5										
	at 9.5 feet; wet	▽								
10				X						
				X						
				X						
				X						
15				X						
	Brown, wet, medium dense, SAND; fine to coarse sand	SP								

Explanation

- Sample Advance / Recovery
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Construction

- Grout/Concrete 2' to 1'
- 3/4-inch bentonite chips 10' to 2'
- Silica sand 17' to 10'
- 2-inch diameter blank PVC casing from 12' to 0'
- 2-inch diameter PVC 0.01 slotted screen 17' to 12'

Ecology Tag #

Logged By:	A.B.	Date	Started:	7-Feb-18	Drilling Contractor:	Drill Rig Type:
Drill Crew:	C.W.		Completed:		Pacific Soil & Water Tigard, Oregon	Direct Push
Locate Number:			Backfilled:		Bit Type: Macro-Core	Diameter: 3-Inch-Diamater
18029789			Groundwater Depth: Not Measured		Elevation: Not Measured	Total Depth of Boring: 25.0 Feet

Depth (feet)	Graphic Log	Drilled Depth	Recovered	Description	PID Result (ppm)	Sheen Test Result	Additional Comments
		5	3	Concrete (~5 Inches) Underlain by Brown to gray GRAVEL (GP) with Silt and Sand and Brick; Moist; Fill			
		5	3	Brown to gray GRAVEL (GP), Trace Silt and Sand; Moist	47.0	NS	
		5	5		28.0	NS	SOIL SAMPLE "DP-1(6.0-8.0)"
10				Wet Soil Conditions Observed at 9.0'			
		5	3	Brown SAND (SP) Trace Silt and Gravel; Moist to Wet	23.0	NS	
		5	3		18.7	NS	
20							
		5	5	Gray sandy GRAVEL (GP); Wet	0.0	NS	
30							

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HE-1-01	BORING DP-1	
OCTOBER 2018	Adams Street Building 6707-6709 S Adams Street Tacoma, Washington 98409	APPENDIX A

Logged By:	A.B.	Date	Started:	7-Feb-18	Drilling Contractor:	Drill Rig Type:
Drill Crew:	C.W.		Completed:		Pacific Soil & Water Tigard, Oregon	Direct Push
Locate Number:			Backfilled:		Bit Type:	Diameter:
					Macro-Core	3-Inch-Diamater
18029789			Groundwater Depth:		Elevation:	Total Depth of Boring:
			Not Measured		Not Measured	25.0 Feet

Depth (feet)	Graphic Log	Drilled Depth	Recovered	Description	PID Result (ppm)	Sheen Test Result	Additional Comments
		5	3	Concrete (~5 Inches) Brown to gray GRAVEL (GP), Trace Silt and Sand; Moist	33.3	NS	
		5	3	Wet Soil Conditions Observed at 7.5'	65.0	NS	SOIL SAMPLE "DP-2(6.0-8.0)"
10		5	3	Brown SAND (SP) Trace Silt and Gravel; Moist to Wet	55.9	NS	SOIL SAMPLE "DP-2(11.0-13.0)"
		5	2	Becomes Without Gravel	19.5	NS	SOIL SAMPLE "DP-2(15.0-17.0)"
20		5	5	Becomes With Trace Gravel	18.0	NS	
				Gray Sandy GRAVEL (GP); Wet			
30							

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HE-1-01	BORING DP-2	
OCTOBER 2018	Adams Street Building 6707-6709 S Adams Street Tacoma, Washington 98409	APPENDIX A

Logged By:	A.B.	Date	Started:	7-Feb-18	Drilling Contractor:	Drill Rig Type:
Drill Crew:	C.W.		Completed:		Pacific Soil & Water Tigard, Oregon	Direct Push
Locate Number:			Backfilled:		Bit Type: Macro-Core	Diameter: 3-Inch-Diamater
18029789			Groundwater Depth: Not Measured		Elevation: Not Measured	Total Depth of Boring: 25.0 Feet

Depth (feet)	Graphic Log	Drilled Depth	Recovered	Description	PID Result (ppm)	Sheen Test Result	Additional Comments
		5	2	Concrete (~5 Inches) Brown to gray GRAVEL (GP), Trace Silt and Sand; Moist	23.2	NS	
		5	3	Wet Soil Conditions Observed at 7.0'	21.8	NS	SOIL SAMPLE "DP-3(5.0-7.0)"
10		5	4	Brown SAND (SP) Trace Silt and Gravel; Moist to Wet	19.7	NS	SOIL SAMPLE "DP-3(12.0-14.0)"
		5	0	Becomes Without Gravel	--	--	
20		5	5	Becomes With Trace Gravel	22.5	NS	SOIL SAMPLE "DP-3(23.0-25.0)"
				Gray Sandy GRAVEL (GP); Wet			
30							

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HE-1-01	BORING DP-3	
OCTOBER 2018	Adams Street Building 6707-6709 S Adams Street Tacoma, Washington 98409	APPENDIX A

Logged By:	A.B.	Date	Started:	7-Feb-18	Drilling Contractor:	Drill Rig Type:
Drill Crew:	C.W.		Completed:		Pacific Soil & Water Tigard, Oregon	Direct Push
Locate Number:			Backfilled:		Bit Type:	Diameter:
					Macro-Core	3-Inch-Diamater
18029789			Groundwater Depth:		Elevation:	Total Depth of Boring:
			Not Measured		Not Measured	25.0 Feet

Depth (feet)	Graphic Log	Drilled Depth	Recovered	Description	PID Result (ppm)	Sheen Test Result	Additional Comments
		5	3	Concrete (~5 Inches) Brown to gray GRAVEL (GP), Trace Silt and Sand; Moist	--	NS	SOIL SAMPLE "DP-4(1.0-3.0)"
		5	2	Wet Soil Conditions Observed at 7.0'	--	NS	
10		5	4	Brown SAND (SP) Trace Silt and Gravel; Moist to Wet	--	NS	SOIL SAMPLE "DP-4(12.0-14.0)"
		5	0	Becomes Without Gravel	--	--	
20		5	4	Becomes With Trace Gravel Gray Sandy GRAVEL (GP); Wet	--	NS	SOIL SAMPLE "DP-4(23.0-25.0)"
30							

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HE-1-01	BORING DP-4	
OCTOBER 2018	Adams Street Building 6707-6709 S Adams Street Tacoma, Washington 98409	APPENDIX A

Logged By:	A.B.	Date	Started:	7-Feb-18	Drilling Contractor:	Drill Rig Type:
Drill Crew:	C.W.		Completed:		Pacific Soil & Water Tigard, Oregon	Direct Push
Locate Number:			Backfilled:		Bit Type:	Diameter:
					Macro-Core	3-Inch-Diamater
18029789			Groundwater Depth:		Elevation:	Total Depth of Boring:
			Not Measured		Not Measured	25.0 Feet

Depth (feet)	Graphic Log	Drilled Depth	Recovered	Description	PID Result (ppm)	Sheen Test Result	Additional Comments
		5	2	Asphalt (~4 Inches) Brown to gray GRAVEL (GP), Trace Silt and Sand; Moist	--	NS	
		5	4	Wet Soil Conditions Observed at 7.0' Brown SAND (SP) Trace Silt and Gravel; Moist to Wet	--	NS	
10		5	3		--	NS	
		5	0	Becomes Without Gravel	--	NS	SOIL SAMPLE "DP-5(17.0-19.0)"
20		5	5	Becomes With Trace Gravel	--	NS	SOIL SAMPLE "DP-5(23.0-25.0)"
				Gray Sandy GRAVEL (GP); Wet			
30							

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HE-1-01	BORING DP-5	
OCTOBER 2018	Adams Street Building 6707-6709 S Adams Street Tacoma, Washington 98409	APPENDIX A

Logged By:	A.B.	Date	Started:	7-Feb-18	Drilling Contractor:	Drill Rig Type:
Drill Crew:	C.W.		Completed:		Pacific Soil & Water Tigard, Oregon	Direct Push
Locate Number:			Backfilled:		Bit Type: Macro-Core	Diameter: 3-Inch-Diamater
18029789			Groundwater Depth: Not Measured		Elevation: Not Measured	Total Depth of Boring: 25.0 Feet

Depth (feet)	Graphic Log	Drilled Depth	Recovered	Description	PID Result (ppm)	Sheen Test Result	Additional Comments
		5	2	Asphalt (~4 Inches) Brown to gray GRAVEL (GP), Trace Silt and Sand; Moist	--	NS	
		5	3	Wet Soil Conditions Observed at 7.0' Brown SAND (SP) Trace Silt and Gravel; Moist to Wet	--	NS	SOIL SAMPLE "DP-6(5.0-7.0)"
10		5	3		--	NS	
		5	0	Becomes Without Gravel	--	NS	SOIL SAMPLE "DP-6(17.0-19.0)"
20		5	4	Becomes With Trace Gravel Gray Sandy GRAVEL (GP); Wet	--	NS	SOIL SAMPLE "DP-6(23.0-25.0)"
30							

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HE-1-01	BORING DP-6	
OCTOBER 2018	Adams Street Building 6707-6709 S Adams Street Tacoma, Washington 98409	APPENDIX A

Logged By:	A.B.	Date	Started:	9-Feb-18	Drilling Contractor:	Drill Rig Type:
Drill Crew:	C.W.		Completed:		Pacific Soil & Water Tigard, Oregon	Direct Push
Locate Number:			Backfilled:		Bit Type: Macro-Core	Diameter: 3-Inch-Diamater
18029789			Groundwater Depth: Not Measured		Elevation: Not Measured	Total Depth of Boring: 25.0 Feet

Depth (feet)	Graphic Log	Drilled Depth	Recovered	Description	PID Result (ppm)	Sheen Test Result	Additional Comments
		5	3	Asphalt (~4 Inches) Gray GRAVEL (GM) with Silt and Sand; Moist; Fill	0.0	NS	
		5	2	Brown to gray GRAVEL (GP), Trace Silt and Sand; Moist Wet Soil Conditions Observed at 7.0'	0.0	NS	SOIL SAMPLE "DP-7(5.0-7.0)"
10		5	3	Brown SAND (SP) Trace Silt and Gravel; Moist to Wet	0.0	NS	SOIL SAMPLE "DP-7(11.0-13.0)"
		5	4	Becomes Without Gravel	0.0	NS	
20		5	4	Becomes With Trace Gravel Gray Sandy GRAVEL (GP); Wet	0.0	NS	SOIL SAMPLE "DP-7(22..0-24.0)"
30							

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HE-1-01	BORING DP-7	
OCTOBER 2018	Adams Street Building 6707-6709 S Adams Street Tacoma, Washington 98409	APPENDIX A

Logged By:	A.B.	Date	Started:	9-Feb-18	Drilling Contractor:	Drill Rig Type:
Drill Crew:	C.W.		Completed:		Pacific Soil & Water Tigard, Oregon	Direct Push
Locate Number:			Backfilled:		Bit Type: Macro-Core	Diameter: 3-Inch-Diamater
18029789			Groundwater Depth: Not Measured		Elevation: Not Measured	Total Depth of Boring: 20

Depth (feet)	Graphic Log	Drilled Depth	Recovered	Description	PID Result (ppm)	Sheen Test Result	Additional Comments
		5	2.5	Asphalt (~4 Inches) Gray GRAVEL (GM) with Silt and Sand; Moist; Fill	0.0	NS	
		5	3	Brown to gray GRAVEL (GP), Trace Silt and Sand; Moist Wet Soil Conditions Observed at 7.0'	0.0	NS	SOIL SAMPLE "DP-8(6.0-8.0)"
10		5	1	Brown SAND (SP) Trace Silt and Gravel; Moist to Wet	0.0	NS	Liner Jammed 14.0 - 15.0 foot BGS interval recovered
		5	5	Becomes Without Gravel	0.0	NS	SOIL SAMPLE "DP-8(14.0-15.0)" SOIL SAMPLE "DP-8(18.0-20.0)"
20							
30							

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HE-1-01	BORING DP-8	
OCTOBER 2018	Adams Street Building 6707-6709 S Adams Street Tacoma, Washington 98409	APPENDIX A

Logged By:	A.B.	Date	Started:	13-Feb-18	Drilling Contractor:	Drill Rig Type:
Drill Crew:	C.W.		Completed:		Pacific Soil & Water Tigard, Oregon	Direct Push
Locate Number:			Backfilled:		Bit Type: Macro-Core	Diameter: 3-Inch-Diamater
18029789			Groundwater Depth: Not Measured		Elevation: Not Measured	Total Depth of Boring: 30

Depth (feet)	Graphic Log	Drilled Depth	Recovered	Description	PID Result (ppm)	Sheen Test Result	Additional Comments
		5	2.5	Concrete (~6 Inches) Gray GRAVEL (GM) with Silt and Sand; Moist; Fill	0.0	NS	
		5	3	Brown to gray GRAVEL (GP), Trace Silt and Sand; Moist Wet Soil Conditions Observed at 7.0'	0.0	NS	
10		5	1	Brown SAND (SP) Trace Silt and Gravel; Moist to Wet	0.0	NS	
		5	5		0.0	NS	Monitoring Well "MW-3D" Installed 0.0-3.0 Foot Seal 3/4" Pre-Pack Screened Interval From 27.5' to 30.0' BGS.
20		5	5		0.0	NS	
		5	5	Gray Sandy GRAVEL (GP); Wet	0.0	NS	SOIL SAMPLE "DP-9(24.0-26.0)"
30							

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HE-1-01	BORING DP-9 /MONITORING WELL MW-3D	
OCTOBER 2018	Adams Street Building 6707-6709 S Adams Street Tacoma, Washington 98409	APPENDIX A

Logged By:	A.B.	Date	Started:	########	Drilling Contractor:	Drill Rig Type:
Drill Crew:	NA		Completed:		SEC	NA
Locate Number:			Backfilled:		Bit Type:	Diameter:
					Hand Auger	2.5 Inch
18029789		Groundwater Depth:			Elevation:	Total Depth of Boring:
		Not Measured			Not Measured	3.0 Feet

Depth (feet)	Graphic Log	Drilled Depth	Recovered	Description	PID Result (ppm)	Sheen Test Result	Additional Comments
				Concrete (~6 Inches)			
				Brown to gray GRAVEL (GP) tr. silt and sand, moist			
1.0			NA		0.0	NS	
2.0					0.0	NS	SOIL SAMPLE "HA-1(2.0-3.0)"
3.0							

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HE-1-01	BORING HA-1	
OCTOBER 2018	Adams Street Building 6707-6709 S Adams Street Tacoma, Washington 98409	APPENDIX A

APPENDIX B

CHEMICAL ANALYTICAL PROGRAM

Chain-of-custody procedures were followed during handling and transport of the samples to the analytical laboratory. The laboratory holds the samples in cold storage pending extraction and/or analysis. The analytical results, analytical methods reference, and laboratory QC records are presented in this appendix. The analytical results also are summarized in the tables of this report.

REVIEW OF ANALYTICAL DATA

The analytical laboratories used for this project maintain an internal quality assurance programs consisting of a combination of the following:

Blanks: Blanks are laboratory-prepared water samples that are free of contaminants. The blanks are carried through the analysis procedure along with the field samples to document that contaminants were not introduced to the samples during sample handling and analysis.

Surrogate Recoveries: Surrogates are organic compounds that are similar in nature to the analytes of concern but are not normally found in nature. The surrogates are added to QC and field samples prior to analysis. The percent recovery of the surrogate is calculated to demonstrate acceptable method performance.

Duplicates: Duplicates are obtained by splitting a sample into two parts. The two separate parts are carried through the analyses. The analytical results are then compared by calculating the RPD between the samples.

MS/MSD Recoveries: An MS sample is a sample that has been split into a second portion. The MSD is obtained by further splitting the MS sample. A known concentration of the analyte of interest is added to the MS and MSD samples. The analytical results for both samples are then compared for RPD and percent recovery to demonstrate acceptable method performance.

BS/BSD Recoveries: BS and BSD samples are obtained and analyzed in the same procedure as the MS/MSD samples; however, the laboratory blank sample is used to obtain the BS/BSD samples. The percent recovery and RPD of the known concentration of analyte of interest added to the BS/BSD sample is calculated after chemical analyses to demonstrate acceptable method performance.

SUMMARY OF ANALYTICAL DATA REVIEW

SEC reviewed the attached analytical data reports for data quality exceptions and deviations from acceptable method performance criteria. Based on our review of the analytical reports, the analytical data appear acceptable for their intended use.

ANALYTICAL REPORT

February 13, 2018

Succeed Environmental Consulting

Sample Delivery Group:	L968786
Samples Received:	02/08/2018
Project Number:	HE-1
Description:	

Report To: Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Entire Report Reviewed By: Brian Ford

Brian Ford
Technical Service Representative

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DP2(15.0-17.0) L968786-03 8

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DP2(6.0-8.0) L968786-01 Solid

Collected by: Andrew Blake | Collected date/time: 02/07/18 12:35 | Received date/time: 02/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072037	1	02/12/18 12:45	02/12/18 13:02	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1071817	1	02/07/18 12:35	02/09/18 15:25	JAH

DP2(11.0-13.0) L968786-02 Solid

Collected by: Andrew Blake | Collected date/time: 02/07/18 12:40 | Received date/time: 02/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072037	1	02/12/18 12:45	02/12/18 13:02	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1071817	1	02/07/18 12:40	02/09/18 15:47	JAH

DP2(15.0-17.0) L968786-03 Solid

Collected by: Andrew Blake | Collected date/time: 02/07/18 12:45 | Received date/time: 02/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072037	1	02/12/18 12:45	02/12/18 13:02	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1071817	1	02/07/18 12:45	02/09/18 16:08	JAH

DP3(5.0-7.0) L968786-04 Solid

Collected by: Andrew Blake | Collected date/time: 02/07/18 14:25 | Received date/time: 02/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072037	1	02/12/18 12:45	02/12/18 13:02	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1071817	1	02/07/18 14:25	02/09/18 16:30	JAH

DP3(12.0-14.0) L968786-05 Solid

Collected by: Andrew Blake | Collected date/time: 02/07/18 14:30 | Received date/time: 02/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072037	1	02/12/18 12:45	02/12/18 13:02	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1071817	1	02/07/18 14:30	02/09/18 16:51	JAH

DP3(23.0-25.0) L968786-06 Solid

Collected by: Andrew Blake | Collected date/time: 02/07/18 14:35 | Received date/time: 02/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072038	1	02/12/18 12:28	02/12/18 12:44	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1071817	1	02/07/18 14:35	02/09/18 17:12	JAH

DP4(1.0-3.0) L968786-07 Solid

Collected by: Andrew Blake | Collected date/time: 02/07/18 15:25 | Received date/time: 02/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072038	1	02/12/18 12:28	02/12/18 12:44	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1071817	1	02/07/18 15:25	02/09/18 17:33	JAH

DP4(12.0-14.0) L968786-08 Solid

Collected by	Collected date/time	Received date/time
Andrew Blake	02/07/18 15:35	02/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072038	1	02/12/18 12:28	02/12/18 12:44	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1071817	1	02/07/18 15:35	02/09/18 17:55	JAH

DP4(23.0-25.0) L968786-09 Solid

Collected by	Collected date/time	Received date/time
Andrew Blake	02/07/18 15:40	02/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072038	1	02/12/18 12:28	02/12/18 12:44	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1071817	1	02/07/18 15:40	02/12/18 14:43	BMB

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	97.8		1	02/12/2018 13:02	WG1072037

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000234	0.00511	1	02/09/2018 15:25	WG1071817
1,1-Dichloroethene	U		0.000310	0.00102	1	02/09/2018 15:25	WG1071817
cis-1,2-Dichloroethene	U		0.000240	0.00102	1	02/09/2018 15:25	WG1071817
trans-1,2-Dichloroethene	U		0.000270	0.00102	1	02/09/2018 15:25	WG1071817
Tetrachloroethene	0.000511	J	0.000282	0.00102	1	02/09/2018 15:25	WG1071817
Trichloroethene	U		0.000285	0.00102	1	02/09/2018 15:25	WG1071817
Vinyl chloride	U		0.000298	0.00102	1	02/09/2018 15:25	WG1071817
(S) Toluene-d8	*92.7*			*80.0-120*		*02/09/2018 15:25*	WG1071817
(S) Dibromofluoromethane	*115*			*74.0-131*		*02/09/2018 15:25*	WG1071817
(S) 4-Bromofluorobenzene	*106*			*64.0-132*		*02/09/2018 15:25*	WG1071817

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.0		1	02/12/2018 13:02	WG1072037

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000246	0.00537	1	02/09/2018 15:47	WG1071817
1,1-Dichloroethene	U		0.000326	0.00107	1	02/09/2018 15:47	WG1071817
cis-1,2-Dichloroethene	U		0.000253	0.00107	1	02/09/2018 15:47	WG1071817
trans-1,2-Dichloroethene	U		0.000284	0.00107	1	02/09/2018 15:47	WG1071817
Tetrachloroethene	U		0.000297	0.00107	1	02/09/2018 15:47	WG1071817
Trichloroethene	U		0.000300	0.00107	1	02/09/2018 15:47	WG1071817
Vinyl chloride	U		0.000313	0.00107	1	02/09/2018 15:47	WG1071817
(S) Toluene-d8	*93.7*			*80.0-120*		*02/09/2018 15:47*	WG1071817
(S) Dibromofluoromethane	*111*			*74.0-131*		*02/09/2018 15:47*	WG1071817
(S) 4-Bromofluorobenzene	*104*			*64.0-132*		*02/09/2018 15:47*	WG1071817

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.8		1	02/12/2018 13:02	WG1072037

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000261	0.00570	1	02/09/2018 16:08	WG1071817
1,1-Dichloroethene	U		0.000345	0.00114	1	02/09/2018 16:08	WG1071817
cis-1,2-Dichloroethene	U		0.000268	0.00114	1	02/09/2018 16:08	WG1071817
trans-1,2-Dichloroethene	U		0.000301	0.00114	1	02/09/2018 16:08	WG1071817
Tetrachloroethene	U		0.000314	0.00114	1	02/09/2018 16:08	WG1071817
Trichloroethene	U		0.000318	0.00114	1	02/09/2018 16:08	WG1071817
Vinyl chloride	U		0.000331	0.00114	1	02/09/2018 16:08	WG1071817
(S) Toluene-d8	*93.4*			*80.0-120*		*02/09/2018 16:08*	WG1071817
(S) Dibromofluoromethane	*111*			*74.0-131*		*02/09/2018 16:08*	WG1071817
(S) 4-Bromofluorobenzene	*104*			*64.0-132*		*02/09/2018 16:08*	WG1071817

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.4		1	02/12/2018 13:02	WG1072037

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000245	0.00536	1	02/09/2018 16:30	WG1071817
1,1-Dichloroethene	U		0.000325	0.00107	1	02/09/2018 16:30	WG1071817
cis-1,2-Dichloroethene	U		0.000252	0.00107	1	02/09/2018 16:30	WG1071817
trans-1,2-Dichloroethene	U		0.000283	0.00107	1	02/09/2018 16:30	WG1071817
Tetrachloroethene	U		0.000296	0.00107	1	02/09/2018 16:30	WG1071817
Trichloroethene	U		0.000299	0.00107	1	02/09/2018 16:30	WG1071817
Vinyl chloride	U		0.000312	0.00107	1	02/09/2018 16:30	WG1071817
(S) Toluene-d8	*93.6*			*80.0-120*		*02/09/2018 16:30*	WG1071817
(S) Dibromofluoromethane	*116*			*74.0-131*		*02/09/2018 16:30*	WG1071817
(S) 4-Bromofluorobenzene	*105*			*64.0-132*		*02/09/2018 16:30*	WG1071817

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.7		1	02/12/2018 13:02	WG1072037

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000247	0.00539	1	02/09/2018 16:51	WG1071817
1,1-Dichloroethene	U		0.000327	0.00108	1	02/09/2018 16:51	WG1071817
cis-1,2-Dichloroethene	U		0.000253	0.00108	1	02/09/2018 16:51	WG1071817
trans-1,2-Dichloroethene	U		0.000285	0.00108	1	02/09/2018 16:51	WG1071817
Tetrachloroethene	0.000635	J	0.000298	0.00108	1	02/09/2018 16:51	WG1071817
Trichloroethene	U		0.000301	0.00108	1	02/09/2018 16:51	WG1071817
Vinyl chloride	U		0.000314	0.00108	1	02/09/2018 16:51	WG1071817
(S) Toluene-d8	*93.7*			*80.0-120*		*02/09/2018 16:51*	WG1071817
(S) Dibromofluoromethane	*112*			*74.0-131*		*02/09/2018 16:51*	WG1071817
(S) 4-Bromofluorobenzene	*105*			*64.0-132*		*02/09/2018 16:51*	WG1071817

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	86.2		1	02/12/2018 12:44	WG1072038

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000266	0.00580	1	02/09/2018 17:12	WG1071817
1,1-Dichloroethene	U		0.000352	0.00116	1	02/09/2018 17:12	WG1071817
cis-1,2-Dichloroethene	U		0.000273	0.00116	1	02/09/2018 17:12	WG1071817
trans-1,2-Dichloroethene	U		0.000306	0.00116	1	02/09/2018 17:12	WG1071817
Tetrachloroethene	U		0.000320	0.00116	1	02/09/2018 17:12	WG1071817
Trichloroethene	U		0.000324	0.00116	1	02/09/2018 17:12	WG1071817
Vinyl chloride	U		0.000338	0.00116	1	02/09/2018 17:12	WG1071817
(S) Toluene-d8	*94.2*			*80.0-120*		*02/09/2018 17:12*	WG1071817
(S) Dibromofluoromethane	*113*			*74.0-131*		*02/09/2018 17:12*	WG1071817
(S) 4-Bromofluorobenzene	*105*			*64.0-132*		*02/09/2018 17:12*	WG1071817

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	98.9		1	02/12/2018 12:44	WG1072038

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000231	0.00505	1	02/09/2018 17:33	WG1071817
1,1-Dichloroethene	U		0.000306	0.00101	1	02/09/2018 17:33	WG1071817
cis-1,2-Dichloroethene	U		0.000238	0.00101	1	02/09/2018 17:33	WG1071817
trans-1,2-Dichloroethene	U		0.000267	0.00101	1	02/09/2018 17:33	WG1071817
Tetrachloroethene	0.000363	J	0.000279	0.00101	1	02/09/2018 17:33	WG1071817
Trichloroethene	U		0.000282	0.00101	1	02/09/2018 17:33	WG1071817
Vinyl chloride	U		0.000294	0.00101	1	02/09/2018 17:33	WG1071817
(S) Toluene-d8	*94.2*			*80.0-120*		*02/09/2018 17:33*	WG1071817
(S) Dibromofluoromethane	*115*			*74.0-131*		*02/09/2018 17:33*	WG1071817
(S) 4-Bromofluorobenzene	*107*			*64.0-132*		*02/09/2018 17:33*	WG1071817

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	83.6		1	02/12/2018 12:44	WG1072038

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000274	0.00598	1	02/09/2018 17:55	WG1071817
1,1-Dichloroethene	U		0.000363	0.00120	1	02/09/2018 17:55	WG1071817
cis-1,2-Dichloroethene	U		0.000281	0.00120	1	02/09/2018 17:55	WG1071817
trans-1,2-Dichloroethene	U		0.000316	0.00120	1	02/09/2018 17:55	WG1071817
Tetrachloroethene	0.0120		0.000330	0.00120	1	02/09/2018 17:55	WG1071817
Trichloroethene	U		0.000334	0.00120	1	02/09/2018 17:55	WG1071817
Vinyl chloride	U		0.000348	0.00120	1	02/09/2018 17:55	WG1071817
(S) Toluene-d8	*94.4*			*80.0-120*		*02/09/2018 17:55*	WG1071817
(S) Dibromofluoromethane	*108*			*74.0-131*		*02/09/2018 17:55*	WG1071817
(S) 4-Bromofluorobenzene	*106*			*64.0-132*		*02/09/2018 17:55*	WG1071817

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	95.7		1	02/12/2018 12:44	WG1072038

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000239	0.00523	1	02/12/2018 14:43	WG1071817
1,1-Dichloroethene	U		0.000317	0.00105	1	02/12/2018 14:43	WG1071817
cis-1,2-Dichloroethene	U		0.000246	0.00105	1	02/12/2018 14:43	WG1071817
trans-1,2-Dichloroethene	U		0.000276	0.00105	1	02/12/2018 14:43	WG1071817
Tetrachloroethene	0.00187		0.000288	0.00105	1	02/12/2018 14:43	WG1071817
Trichloroethene	U		0.000292	0.00105	1	02/12/2018 14:43	WG1071817
Vinyl chloride	U		0.000304	0.00105	1	02/12/2018 14:43	WG1071817
(S) Toluene-d8	*97.4*			*80.0-120*		*02/12/2018 14:43*	WG1071817
(S) Dibromofluoromethane	*97.6*			*74.0-131*		*02/12/2018 14:43*	WG1071817
(S) 4-Bromofluorobenzene	*96.8*			*64.0-132*		*02/12/2018 14:43*	WG1071817

Method Blank (MB)

(MB) R3285822-1 02/12/18 13:02

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.002			

L968786-05 Original Sample (OS) • Duplicate (DUP)

(OS) L968786-05 02/12/18 13:02 • (DUP) R3285822-3 02/12/18 13:02

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	92.7	93.6	1	1		5

Laboratory Control Sample (LCS)

(LCS) R3285822-2 02/12/18 13:02

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85-115	

Method Blank (MB)

(MB) R3285820-1 02/12/18 12:44

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.001			

L968072-01 Original Sample (OS) • Duplicate (DUP)

(OS) L968072-01 02/12/18 12:44 • (DUP) R3285820-3 02/12/18 12:44

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	80.7	81.2	1	1		5

Laboratory Control Sample (LCS)

(LCS) R3285820-2 02/12/18 12:44

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85-115	

Method Blank (MB)

(MB) R3285622-3 02/09/18 12:01

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloroform	U		0.000229	0.00500
1,1-Dichloroethene	U		0.000303	0.00100
cis-1,2-Dichloroethene	U		0.000235	0.00100
trans-1,2-Dichloroethene	U		0.000264	0.00100
Tetrachloroethene	U		0.000276	0.00100
Trichloroethene	U		0.000279	0.00100
Vinyl chloride	U		0.000291	0.00100
(S) Toluene-d8	*101*			*80.0-120*
(S) Dibromofluoromethane	*106*			*74.0-131*
(S) 4-Bromofluorobenzene	*105*			*64.0-132*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3285622-1 02/09/18 10:57 • (LCSD) R3285622-2 02/09/18 11:18

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloroform	0.0250	0.0266	0.0265	106	106	73.0-123			0.438	20
1,1-Dichloroethene	0.0250	0.0261	0.0257	104	103	63.0-131			1.52	20
cis-1,2-Dichloroethene	0.0250	0.0258	0.0247	103	98.9	74.0-123			4.38	20
trans-1,2-Dichloroethene	0.0250	0.0250	0.0246	99.9	98.5	72.0-122			1.48	20
Tetrachloroethene	0.0250	0.0227	0.0237	90.7	94.6	70.0-127			4.26	20
Trichloroethene	0.0250	0.0234	0.0238	93.6	95.4	79.0-120			1.87	20
Vinyl chloride	0.0250	0.0224	0.0220	89.7	87.8	63.0-134			2.11	20
(S) Toluene-d8				*100*	*102*	*80.0-120*				
(S) Dibromofluoromethane				*105*	*103*	*74.0-131*				
(S) 4-Bromofluorobenzene				*104*	*102*	*64.0-132*				

L968492-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L968492-02 02/09/18 12:55 • (MS) R3285622-4 02/09/18 20:02 • (MSD) R3285622-5 02/09/18 20:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloroform	0.0250	ND	0.0205	0.0199	82.2	79.4	1	18.0-148			3.41	28
1,1-Dichloroethene	0.0250	ND	0.0209	0.0193	83.6	77.3	1	10.0-150			7.79	31
cis-1,2-Dichloroethene	0.0250	ND	0.0198	0.0188	79.3	75.2	1	16.0-145			5.36	28
trans-1,2-Dichloroethene	0.0250	ND	0.0187	0.0179	74.8	71.8	1	11.0-142			4.18	29
Tetrachloroethene	0.0250	0.00755	0.0177	0.0146	40.6	28.1	1	10.0-144			19.3	32
Trichloroethene	0.0250	ND	0.0173	0.0157	67.2	61.0	1	11.0-148			9.36	29
Vinyl chloride	0.0250	ND	0.0192	0.0180	76.7	71.9	1	10.0-150			6.46	29

L968492-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L968492-02 02/09/18 12:55 • (MS) R3285622-4 02/09/18 20:02 • (MSD) R3285622-5 02/09/18 20:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
(S) Toluene-d8					*93.8*	*91.6*		*80.0-120*				
(S) Dibromofluoromethane					*109*	*113*		*74.0-131*				
(S) 4-Bromofluorobenzene					*103*	*102*		*64.0-132*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.

Succeed Environmental Consulting

6028 NE 49th Avenue
Portland, OR 97218

Billing Information:
Andrew Blake
6028 NE 49th Ave.
Portland, OR 97218

Pres Chk

Report to: Andrew Blake

Email To: ablake@succeed-env.com

Project Description:

City/State Collected: Keene, NH

Phone: 971-371-0404
Fax:

Client Project # HE-1

Lab Project # SUCENVPOR-HE1

Collected by (print): Andrew Blake

Site/Facility ID #

P.O. # —

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
X Three Day

Quote # — 4/cs.

Date Results Needed

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

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L # 968786

C113

Table

Acctnum: SUCENVPOR
Template: T132035
Prelogin: P636453
TSR: 119 - Brian Ford
PB: 1/25/18 mm
Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260C VOCs 40ml/NaHSO4/Syr/MeOH *	dry wt, voc screen 2ozClr-NoPres		Remarks	Sample # (lab only)
DP-1 (1.0-3.0)	—	SS	—	2/1/18	11:30	5	X	X	Hold		
DP-1 (6.0-8.0)	—	SS	—		11:35	5	X	X	Hold		
DP-1 (11.0-13.0)	—	SS	—		11:39	5	X	X	Hold		
DP-1 (15.0-17.0)	—	SS	—		11:40	5	X	X	Hold		
DP-1 (22.0-24.0)	—	SS	—		11:45	5	X	X	Hold		
DP-2 (1.0-3.0)	—	SS	—		12:30	5	X	X	Hold		
DP-2 (6.0-8.0)	—	SS	—		12:35	5	X	X	OK		-01
DP-2 (11.0-17.0)	—	SS	—		12:40	5	X	X	OK		-02
DP-2 (15.0-17.0)	—	SS	—		12:45	5	X	X	OK		-03
DP-2 (23.0-25.0)	—	SS	—		12:50	5	X	X	Hold		

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: Analyze specifically for PCE, TCE, DCEs, VC and Chloroform.

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS X FedEx __ Courier __ _____

Tracking # 4196 3261 8547 - 8536

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: X Y __N
Bottles arrive intact: X Y __N
Correct bottles used: X Y __N
Sufficient volume sent: X Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	2/2/18	FEDEX		1
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 5.5 °C Bottles Received: 89
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2/3/18 Time: 0845

If preservation required by Login: Date/Time

2-046

Condition: NCF / OK

Succeed Environmental Consulting

6028 NE 49th Avenue
Portland, OR 97218

Billing Information:
Andrew Blake
6028 NE 49th Ave.
Portland, OR 97218

Pres Chk

Report to: Andrew Blake

Email To: ablake@succeed-env.com

Project Description: —

City/State Collected: Tacoma, WA

Phone: 971-371-0404
Fax:

Client Project # HE-1

Lab Project # SUCENVPOR-HE1

Collected by (print): Andrew Blake

Site/Facility ID #

P.O. # —

Collected by (signature):

Quote #

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
X Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260C VOCs 40ml/NaHS04/Syr/MeOH	dry wt,voc screen 2ozClr-NoPres								Remarks	Sample # (lab only)
DP-3 (0.0-2.0)	—	SS	—	2/7/18	14:20	5	X	X	Hold								
DP-3 (5.0-7.0)	↓	SS	↓	↓	14:25	5	X	X	OK								-04
DP-3 (12.0-14.0)	↓	SS	↓	↓	14:30	5	X	X	OK								-05
DP-3 (23.0-25.0)	↓	SS	↓	↓	14:35	5	X	X	OK								-06
Temp Blank		SS			—	5	X	X	OK								-07
DP-4 (1.0-3.0)		SS			15:25	5	X	X	OK								-08-07
DP-4 (5.0-7.0)		SS			15:30	5	X	X	Hold								
DP-4 (12.0-14.0)		SS			15:35	5	X	X	OK							ke	-09-08
DP-4 (23.0-25.0)		SS			15:40	5	X	X	OK								-10-09
		SS				5	X	X									

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: See P.1

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS X FedEx __ Courier _____

Tracking # 419632618547-8536

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	2/7/18	FEDEX	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Kelly Flemm84

Trip Blank Received: Yes / No
1
HCL / MeoH
TBR

Temp: 5.5 °C Bottles Received: 89

Date: 2/8/18 Time: 0845

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Chain of Custody Page 2 of 2

ESC LABORATORIES
a subsidiary of ALS Environmental

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 968786

Table #

Acctnum: SUCENVPOR
Template: T132035
Prelogin: P636453
TSR: 110 - Brian Ford
PB: 1-25-18 mb

Shipped Via: FedEX Ground

Katie Ingram

ESC Lab Sciences
Non-Conformance Form

L968786

Login #:~~L986786~~	Client:SUCENVPOR	Date:02/08/18	Evaluated by: Myra "Katie" Ingram

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Improper temperature		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	Improper preservation		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courie
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
X	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments:

One stirbar for ID: DP-4(1.0-3.0) received broken

Client informed by:		Call		Email		Voice Mail		Date:	Time:
TSR Initials:bjf	Client Contact:								

Login Instructions:

Proceed with remaining sample volume

ANALYTICAL REPORT

February 15, 2018

Succeed Environmental Consulting

Sample Delivery Group:	L969428
Samples Received:	02/10/2018
Project Number:	HE-1
Description:	

Report To: Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Entire Report Reviewed By: Brian Ford

Brian Ford
Technical Service Representative

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DP-7(11.0-13.0) L969428-01 Solid

Collected by: Andrew Blake | Collected date/time: 02/09/18 09:35 | Received date/time: 02/10/18 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1073290	1	02/14/18 13:56	02/14/18 14:08	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1072444	1	02/09/18 09:35	02/11/18 14:48	JAH

DP-7(22.0-24.0) L969428-02 Solid

Collected by: Andrew Blake | Collected date/time: 02/09/18 09:45 | Received date/time: 02/10/18 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1073290	1	02/14/18 13:56	02/14/18 14:08	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1072444	1	02/09/18 09:45	02/11/18 15:09	JAH

DP-8(14.0-15.0) L969428-03 Solid

Collected by: Andrew Blake | Collected date/time: 02/09/18 12:05 | Received date/time: 02/10/18 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1073290	1	02/14/18 13:56	02/14/18 14:08	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1072444	1	02/09/18 12:05	02/11/18 15:30	JAH

DP-8(18.0-20.0) L969428-04 Solid

Collected by: Andrew Blake | Collected date/time: 02/09/18 12:10 | Received date/time: 02/10/18 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1073290	1	02/14/18 13:56	02/14/18 14:08	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1072444	1	02/09/18 12:10	02/11/18 15:51	JAH

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	85.2		1	02/14/2018 14:08	WG1073290

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000269	0.00587	1	02/11/2018 14:48	WG1072444
1,1-Dichloroethene	U		0.000356	0.00117	1	02/11/2018 14:48	WG1072444
cis-1,2-Dichloroethene	U		0.000276	0.00117	1	02/11/2018 14:48	WG1072444
trans-1,2-Dichloroethene	U		0.000310	0.00117	1	02/11/2018 14:48	WG1072444
Tetrachloroethene	0.000825	J	0.000324	0.00117	1	02/11/2018 14:48	WG1072444
Trichloroethene	U		0.000328	0.00117	1	02/11/2018 14:48	WG1072444
Vinyl chloride	U		0.000342	0.00117	1	02/11/2018 14:48	WG1072444
(S) Toluene-d8	*98.7*			*80.0-120*		*02/11/2018 14:48*	WG1072444
(S) Dibromofluoromethane	*96.6*			*74.0-131*		*02/11/2018 14:48*	WG1072444
(S) 4-Bromofluorobenzene	*96.4*			*64.0-132*		*02/11/2018 14:48*	WG1072444

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.3		1	02/14/2018 14:08	WG1073290

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000248	0.00542	1	02/11/2018 15:09	WG1072444
1,1-Dichloroethene	U		0.000328	0.00108	1	02/11/2018 15:09	WG1072444
cis-1,2-Dichloroethene	U		0.000255	0.00108	1	02/11/2018 15:09	WG1072444
trans-1,2-Dichloroethene	U		0.000286	0.00108	1	02/11/2018 15:09	WG1072444
Tetrachloroethene	0.0178		0.000299	0.00108	1	02/11/2018 15:09	WG1072444
Trichloroethene	U		0.000302	0.00108	1	02/11/2018 15:09	WG1072444
Vinyl chloride	U		0.000315	0.00108	1	02/11/2018 15:09	WG1072444
(S) Toluene-d8	*96.3*			*80.0-120*		*02/11/2018 15:09*	WG1072444
(S) Dibromofluoromethane	*96.6*			*74.0-131*		*02/11/2018 15:09*	WG1072444
(S) 4-Bromofluorobenzene	*97.3*			*64.0-132*		*02/11/2018 15:09*	WG1072444

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.0		1	02/14/2018 14:08	WG1073290

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000263	0.00575	1	02/11/2018 15:30	WG1072444
1,1-Dichloroethene	U		0.000348	0.00115	1	02/11/2018 15:30	WG1072444
cis-1,2-Dichloroethene	U		0.000270	0.00115	1	02/11/2018 15:30	WG1072444
trans-1,2-Dichloroethene	U		0.000304	0.00115	1	02/11/2018 15:30	WG1072444
Tetrachloroethene	U		0.000317	0.00115	1	02/11/2018 15:30	WG1072444
Trichloroethene	U		0.000321	0.00115	1	02/11/2018 15:30	WG1072444
Vinyl chloride	U		0.000335	0.00115	1	02/11/2018 15:30	WG1072444
(S) Toluene-d8	*99.1*			*80.0-120*		*02/11/2018 15:30*	WG1072444
(S) Dibromofluoromethane	*96.3*			*74.0-131*		*02/11/2018 15:30*	WG1072444
(S) 4-Bromofluorobenzene	*96.1*			*64.0-132*		*02/11/2018 15:30*	WG1072444

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.1		1	02/14/2018 14:08	WG1073290

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000263	0.00574	1	02/11/2018 15:51	WG1072444
1,1-Dichloroethene	U		0.000348	0.00115	1	02/11/2018 15:51	WG1072444
cis-1,2-Dichloroethene	U		0.000270	0.00115	1	02/11/2018 15:51	WG1072444
trans-1,2-Dichloroethene	U		0.000303	0.00115	1	02/11/2018 15:51	WG1072444
Tetrachloroethene	U		0.000317	0.00115	1	02/11/2018 15:51	WG1072444
Trichloroethene	U		0.000320	0.00115	1	02/11/2018 15:51	WG1072444
Vinyl chloride	U		0.000334	0.00115	1	02/11/2018 15:51	WG1072444
(S) Toluene-d8	*99.4*			*80.0-120*		*02/11/2018 15:51*	WG1072444
(S) Dibromofluoromethane	*96.2*			*74.0-131*		*02/11/2018 15:51*	WG1072444
(S) 4-Bromofluorobenzene	*96.0*			*64.0-132*		*02/11/2018 15:51*	WG1072444

Method Blank (MB)

(MB) R3286516-1 02/14/18 14:08

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0			

L968931-04 Original Sample (OS) • Duplicate (DUP)

(OS) L968931-04 02/14/18 14:08 • (DUP) R3286516-3 02/14/18 14:08

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	86.1	86.7	1	1		5

Laboratory Control Sample (LCS)

(LCS) R3286516-2 02/14/18 14:08

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85-115	

Method Blank (MB)

(MB) R3285600-3 02/11/18 12:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloroform	U		0.000229	0.00500
1,1-Dichloroethene	U		0.000303	0.00100
cis-1,2-Dichloroethene	U		0.000235	0.00100
trans-1,2-Dichloroethene	U		0.000264	0.00100
Tetrachloroethene	U		0.000276	0.00100
Trichloroethene	U		0.000279	0.00100
Vinyl chloride	U		0.000291	0.00100
(S) Toluene-d8	*106*			*80.0-120*
(S) Dibromofluoromethane	*87.1*			*74.0-131*
(S) 4-Bromofluorobenzene	*97.3*			*64.0-132*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3285600-1 02/11/18 11:04 • (LCSD) R3285600-2 02/11/18 11:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloroform	0.0250	0.0239	0.0232	95.6	92.8	73.0-123			2.95	20
1,1-Dichloroethene	0.0250	0.0242	0.0231	96.8	92.6	63.0-131			4.44	20
cis-1,2-Dichloroethene	0.0250	0.0239	0.0230	95.7	91.8	74.0-123			4.19	20
trans-1,2-Dichloroethene	0.0250	0.0237	0.0228	94.7	91.1	72.0-122			3.78	20
Tetrachloroethene	0.0250	0.0263	0.0251	105	100	70.0-127			4.84	20
Trichloroethene	0.0250	0.0248	0.0243	99.4	97.3	79.0-120			2.08	20
Vinyl chloride	0.0250	0.0210	0.0204	84.2	81.5	63.0-134			3.24	20
(S) Toluene-d8				*102*	*103*	*80.0-120*				
(S) Dibromofluoromethane				*92.0*	*92.3*	*74.0-131*				
(S) 4-Bromofluorobenzene				*94.7*	*96.2*	*64.0-132*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.

Succeed Environmental Consulting

6028 NE 49th Avenue
Portland, OR 97218

Billing Information:
Andrew Blake
6028 NE 49th Ave.
Portland, OR 97218

Report to: Andrew Blake

Email To: ablake@succeed-env.com

Project Description:

City/State Collected:

Phone: 971-371-0404
Fax:

Client Project # HE-1

Lab Project # SUCENVPOR-HE1

Collected by (print): Andrew Blake

Site/Facility ID # —

P.O. # —

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
X Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote # Yes - HE-1

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260C VOCs 40ml/NaHS04/Syr/MeOH	dry wt,voc screen 2ozClr-NoPres	Analysis / Container / Preservative	Remarks	Sample # (lab only)
DP-7 (1.0-3.0)		SS		2/9/18	9:25	5	X	X	HCl		
DP-7 (5.0-7.0)		SS			9:30	5	X	X	HCl		
DP-7 (11.0-13.0)		↓			9:35	5	X	X			-01
DP-7 (17.0-19.0)					9:40	5			HCl		
DP-7 (22.0-24.0)					9:45	5	X	X			
DP-8 (1.0-2.5)					11:55	5			HCl		-02
DP-8 (6.0-8.0)					12:00	5			HCl		
DP-8 (14.0-15.0)					12:25	5	X	X			
DP-8 (18.0-20.0)					12:10	5	X	X			-03
											-04

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS X FedEx __ Courier __ _____

Tracking #: 7384 4206 3998

Relinquished by : (Signature)

Date: 2/9/18 Time: FedEx

Received by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR
1

Relinquished by : (Signature)

Date: Time:

Received by: (Signature)

Temp: 4.5 °C Bottles Received: 45

If preservation required by Login: Date/Time

Relinquished by : (Signature)

Date: Time:

Received for lab by: (Signature)

Date: 2/10/18 Time: 0900

Condition: NCF / OK

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Chain of Custody Page 1 of 1

ESC LAB SCIENCES
a subsidiary of Pace Analytical

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 469428

H001

Acctnum: SUCENVPOR
Template: T132035
Prelogin: P636453
TSR: 110 - Brian Ford
PB: 1/25/18 mm6
Shipped Via: FedEX Ground

2-063

ANALYTICAL REPORT

February 13, 2018

Succeed Environmental Consulting

Sample Delivery Group:	L969558
Samples Received:	02/09/2018
Project Number:	HE-1
Description:	

Report To: Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Entire Report Reviewed By: Brian Ford

Brian Ford
Technical Service Representative

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DP-5(17.0-19.0) L969558-01 Solid

Collected by: Andrew Blake
Collected date/time: 02/07/18 17:00
Received date/time: 02/09/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072608	1	02/12/18 16:40	02/12/18 16:49	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1072978	1	02/07/18 17:00	02/13/18 12:45	DWR

DP-5(23.0-25.0) L969558-02 Solid

Collected by: Andrew Blake
Collected date/time: 02/07/18 17:10
Received date/time: 02/09/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072608	1	02/12/18 16:40	02/12/18 16:49	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1072978	1	02/07/18 17:10	02/13/18 13:05	DWR

DP-6(17.0-19.0) L969558-06 Solid

Collected by: Andrew Blake
Collected date/time: 02/07/18 18:20
Received date/time: 02/09/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072608	1	02/12/18 16:40	02/12/18 16:49	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1072978	1	02/07/18 18:20	02/13/18 13:25	DWR

DP-6(23.0-25.0) L969558-07 Solid

Collected by: Andrew Blake
Collected date/time: 02/07/18 18:25
Received date/time: 02/09/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1072938	1	02/13/18 10:03	02/13/18 10:12	JD
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1072978	1	02/07/18 18:25	02/13/18 13:45	DWR

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.1		1	02/12/2018 16:49	WG1072608

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000254	0.00555	1	02/13/2018 12:45	WG1072978
1,1-Dichloroethene	U		0.000336	0.00111	1	02/13/2018 12:45	WG1072978
cis-1,2-Dichloroethene	U		0.000261	0.00111	1	02/13/2018 12:45	WG1072978
trans-1,2-Dichloroethene	U		0.000293	0.00111	1	02/13/2018 12:45	WG1072978
Tetrachloroethene	0.0148		0.000306	0.00111	1	02/13/2018 12:45	WG1072978
Trichloroethene	U		0.000310	0.00111	1	02/13/2018 12:45	WG1072978
Vinyl chloride	U		0.000323	0.00111	1	02/13/2018 12:45	WG1072978
(S) Toluene-d8	*94.0*			*80.0-120*		*02/13/2018 12:45*	WG1072978
(S) Dibromofluoromethane	*108*			*74.0-131*		*02/13/2018 12:45*	WG1072978
(S) 4-Bromofluorobenzene	*102*			*64.0-132*		*02/13/2018 12:45*	WG1072978

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	85.8		1	02/12/2018 16:49	WG1072608

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000267	0.00583	1	02/13/2018 13:05	WG1072978
1,1-Dichloroethene	U		0.000353	0.00117	1	02/13/2018 13:05	WG1072978
cis-1,2-Dichloroethene	U		0.000274	0.00117	1	02/13/2018 13:05	WG1072978
trans-1,2-Dichloroethene	U		0.000308	0.00117	1	02/13/2018 13:05	WG1072978
Tetrachloroethene	0.00923		0.000322	0.00117	1	02/13/2018 13:05	WG1072978
Trichloroethene	U		0.000325	0.00117	1	02/13/2018 13:05	WG1072978
Vinyl chloride	U		0.000339	0.00117	1	02/13/2018 13:05	WG1072978
(S) Toluene-d8	*95.8*			*80.0-120*		*02/13/2018 13:05*	WG1072978
(S) Dibromofluoromethane	*108*			*74.0-131*		*02/13/2018 13:05*	WG1072978
(S) 4-Bromofluorobenzene	*100*			*64.0-132*		*02/13/2018 13:05*	WG1072978

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	96.6		1	02/12/2018 16:49	WG1072608

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000237	0.00517	1	02/13/2018 13:25	WG1072978
1,1-Dichloroethene	U		0.000314	0.00103	1	02/13/2018 13:25	WG1072978
cis-1,2-Dichloroethene	U		0.000243	0.00103	1	02/13/2018 13:25	WG1072978
trans-1,2-Dichloroethene	U		0.000273	0.00103	1	02/13/2018 13:25	WG1072978
Tetrachloroethene	U		0.000286	0.00103	1	02/13/2018 13:25	WG1072978
Trichloroethene	U		0.000289	0.00103	1	02/13/2018 13:25	WG1072978
Vinyl chloride	U		0.000301	0.00103	1	02/13/2018 13:25	WG1072978
(S) Toluene-d8	*96.5*			*80.0-120*		*02/13/2018 13:25*	WG1072978
(S) Dibromofluoromethane	*109*			*74.0-131*		*02/13/2018 13:25*	WG1072978
(S) 4-Bromofluorobenzene	*99.9*			*64.0-132*		*02/13/2018 13:25*	WG1072978

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.2		1	02/13/2018 10:12	WG1072938

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000263	0.00574	1	02/13/2018 13:45	WG1072978
1,1-Dichloroethene	U		0.000348	0.00115	1	02/13/2018 13:45	WG1072978
cis-1,2-Dichloroethene	U		0.000270	0.00115	1	02/13/2018 13:45	WG1072978
trans-1,2-Dichloroethene	U		0.000303	0.00115	1	02/13/2018 13:45	WG1072978
Tetrachloroethene	U		0.000317	0.00115	1	02/13/2018 13:45	WG1072978
Trichloroethene	U		0.000320	0.00115	1	02/13/2018 13:45	WG1072978
Vinyl chloride	U		0.000334	0.00115	1	02/13/2018 13:45	WG1072978
(S) Toluene-d8	*95.4*			*80.0-120*		*02/13/2018 13:45*	WG1072978
(S) Dibromofluoromethane	*108*			*74.0-131*		*02/13/2018 13:45*	WG1072978
(S) 4-Bromofluorobenzene	*103*			*64.0-132*		*02/13/2018 13:45*	WG1072978

Method Blank (MB)

(MB) R3285836-1 02/12/18 16:49

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0			

L968072-05 Original Sample (OS) • Duplicate (DUP)

(OS) L968072-05 02/12/18 16:49 • (DUP) R3285836-3 02/12/18 16:49

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	87.9	86.9	1	1		5

Laboratory Control Sample (LCS)

(LCS) R3285836-2 02/12/18 16:49

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85-115	

Method Blank (MB)

(MB) R3285993-1 02/13/18 10:12

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.001			

L968686-01 Original Sample (OS) • Duplicate (DUP)

(OS) L968686-01 02/13/18 10:12 • (DUP) R3285993-3 02/13/18 10:12

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	95.8	95.6	1	0		5

Laboratory Control Sample (LCS)

(LCS) R3285993-2 02/13/18 10:12

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85-115	

Method Blank (MB)

(MB) R3285961-3 02/13/18 10:37

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloroform	U		0.000229	0.00500
1,1-Dichloroethene	U		0.000303	0.00100
cis-1,2-Dichloroethene	U		0.000235	0.00100
trans-1,2-Dichloroethene	U		0.000264	0.00100
Tetrachloroethene	U		0.000276	0.00100
Trichloroethene	U		0.000279	0.00100
Vinyl chloride	U		0.000291	0.00100
(S) Toluene-d8	*105*			*80.0-120*
(S) Dibromofluoromethane	*99.5*			*74.0-131*
(S) 4-Bromofluorobenzene	*101*			*64.0-132*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3285961-1 02/13/18 09:37 • (LCSD) R3285961-2 02/13/18 09:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloroform	0.0250	0.0266	0.0257	106	103	73.0-123			3.32	20
1,1-Dichloroethene	0.0250	0.0261	0.0244	104	97.5	63.0-131			6.87	20
cis-1,2-Dichloroethene	0.0250	0.0281	0.0266	112	106	74.0-123			5.60	20
trans-1,2-Dichloroethene	0.0250	0.0271	0.0258	109	103	72.0-122			5.28	20
Tetrachloroethene	0.0250	0.0273	0.0256	109	102	70.0-127			6.36	20
Trichloroethene	0.0250	0.0279	0.0265	111	106	79.0-120			5.13	20
Vinyl chloride	0.0250	0.0228	0.0212	91.2	85.0	63.0-134			7.11	20
(S) Toluene-d8				*104*	*103*	*80.0-120*				
(S) Dibromofluoromethane				*99.6*	*98.7*	*74.0-131*				
(S) 4-Bromofluorobenzene				*98.5*	*97.7*	*64.0-132*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party Federal Accreditations

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Our Locations

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Succeed Environmental Consulting

6028 NE 49th Avenue
Portland, OR 97218

Billing Information:
Andrew Blake
6028 NE 49th Ave.
Portland, OR 97218

Pres Chk

Report to: Andrew Blake

Email To: ablake@succeed-env.com

Project Description: —

City/State Collected: Tacoma, WA

Phone: 971-371-0404
Fax:

Client Project # HE-1

Lab Project # SUCENVPOR-HE1

Collected by (print): Andrew Blake

Site/Facility ID # —

P.O. # —

Collected by (signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote # Yes

Date Results Needed

Immediately Packed on Ice N ___ Y X

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260C VOCs 40ml/NaHS04/Syr/MeOH	dry wt,voc screen 2ozClr-NoPres	Analysis / Container / Preservative	Remarks	Sample # (lab only)
DP-5 (17.0-19.0)	—	SS	—	2/7/18	17:00	5	X	X			-01
DP-5 (23.0-25.0)	—	SS	—	2/7/18	17:10	5	X	X			-02
DP-6 (1.0-3.0)	—	SS	—		18:00	~~5~~	~~X~~	~~X~~	Hold		~~-03~~
DP-6 (5.0-7.0)	—	SS	—		18:05	5	X	X			-04
DP-6 (12.0-14.0)	—	SS	—		18:10	5	X	X		-03	~~-05~~
DP-6 (17.0-19.0)	—	SS	—		18:20	~~5~~	~~X~~	~~X~~	Hold	-04	-05
DP-6 (23.0-25.0)	—	SS	—		18:25	5	X	X			-06
		SS				5	X	X			
		SS				5	X	X			
		SS				5	X	X			

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # ~~4269 9203 4510~~

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
a subsidiary of Pace Analytical

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1969558

Table #

Acctnum: SUCENVPOR
Template: T132035
Prelogin: P636453
TSR: 110 - Brian Ford
PB: 1/25/18 MVB
Shipped Via: FedEX Ground

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	2/8/18	FED EX	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / (No) HCL / MeoH TBR

Temp: 2.8 °C Bottles Received: 35

Date: 2-9-18 Time: 0845

If preservation required by Login: Date/Time

2-070

Condition: NCF / (OK)

Brian Ford

From: Brian Ford
Sent: Saturday, February 10, 2018 5:28 PM
To: Brian Ford
Subject: FW: ESC Lab Sciences HE-1 L969558

From: Andrew Blake [mailto:ablake@succeed-env.com]
Sent: Saturday, February 10, 2018 9:53 AM
To: Brian Ford
Subject: Re: ESC Lab Sciences OL-1-01 L969142

… please analyze the following for HVOCs on a 3 day TAT:

DP-5(17.0-19.0), DP-5(23.0-25.0), DP-6(17.0-19.0), and DP-5(23.0-25.0).

Hold the rest for now. Thanks!

Andrew S. Blake, R.G., L.G.
Principal Geologist

Succeed Environmental Consulting, LLC
6028 NE 49th Avenue
Portland, Oregon. 97218

971-371-0404
ablake@succeed-env.com

ANALYTICAL REPORT

February 16, 2018

Succeed Environmental Consulting

Sample Delivery Group:	L969937
Samples Received:	02/14/2018
Project Number:	HE-1
Description:	

Report To: Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Entire Report Reviewed By: Brian Ford

Brian Ford
Technical Service Representative

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DP-9(24.0-26.0) L969937-01 Solid

Collected by	Collected date/time	Received date/time
Andrew Blake	02/13/18 13:30	02/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1073918	1	02/15/18 10:59	02/15/18 11:08	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1073433	1	02/13/18 13:30	02/14/18 13:44	ACG

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.7		1	02/15/2018 11:08	WG1073918

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000250	0.00545	1	02/14/2018 13:44	WG1073433
1,1-Dichloroethene	U		0.000331	0.00109	1	02/14/2018 13:44	WG1073433
cis-1,2-Dichloroethene	U		0.000256	0.00109	1	02/14/2018 13:44	WG1073433
trans-1,2-Dichloroethene	U		0.000288	0.00109	1	02/14/2018 13:44	WG1073433
Tetrachloroethene	U		0.000301	0.00109	1	02/14/2018 13:44	WG1073433
Trichloroethene	U		0.000304	0.00109	1	02/14/2018 13:44	WG1073433
Vinyl chloride	U		0.000317	0.00109	1	02/14/2018 13:44	WG1073433
(S) Toluene-d8	*100*			*80.0-120*		*02/14/2018 13:44*	WG1073433
(S) Dibromofluoromethane	*107*			*74.0-131*		*02/14/2018 13:44*	WG1073433
(S) 4-Bromofluorobenzene	*97.6*			*64.0-132*		*02/14/2018 13:44*	WG1073433

Method Blank (MB)

(MB) R3286840-1 02/15/18 11:08

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0			

L969950-02 Original Sample (OS) • Duplicate (DUP)

(OS) L969950-02 02/15/18 11:08 • (DUP) R3286840-3 02/15/18 11:08

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	84.8	85.3	1	1		5

Laboratory Control Sample (LCS)

(LCS) R3286840-2 02/15/18 11:08

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85-115	

Method Blank (MB)

(MB) R3286282-3 02/14/18 11:08

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloroform	U		0.000229	0.00500
1,1-Dichloroethene	U		0.000303	0.00100
cis-1,2-Dichloroethene	U		0.000235	0.00100
trans-1,2-Dichloroethene	U		0.000264	0.00100
Tetrachloroethene	U		0.000276	0.00100
Trichloroethene	U		0.000279	0.00100
Vinyl chloride	U		0.000291	0.00100
(S) Toluene-d8	*103*			*80.0-120*
(S) Dibromofluoromethane	*102*			*74.0-131*
(S) 4-Bromofluorobenzene	*98.1*			*64.0-132*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3286282-1 02/14/18 09:50 • (LCSD) R3286282-2 02/14/18 10:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloroform	0.0250	0.0271	0.0263	108	105	73.0-123			2.99	20
1,1-Dichloroethene	0.0250	0.0269	0.0262	108	105	63.0-131			2.51	20
cis-1,2-Dichloroethene	0.0250	0.0244	0.0246	97.5	98.4	74.0-123			0.830	20
trans-1,2-Dichloroethene	0.0250	0.0248	0.0258	99.3	103	72.0-122			3.88	20
Tetrachloroethene	0.0250	0.0287	0.0292	115	117	70.0-127			1.56	20
Trichloroethene	0.0250	0.0264	0.0251	106	100	79.0-120			5.23	20
Vinyl chloride	0.0250	0.0251	0.0238	100	95.3	63.0-134			5.23	20
(S) Toluene-d8				*105*	*106*	*80.0-120*				
(S) Dibromofluoromethane				*102*	*101*	*74.0-131*				
(S) 4-Bromofluorobenzene				*98.9*	*99.8*	*64.0-132*				

L969937-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L969937-01 02/14/18 13:44 • (MS) R3286282-4 02/14/18 14:04 • (MSD) R3286282-5 02/14/18 14:23

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloroform	0.0273	U	0.0195	0.0194	71.6	71.2	1	18.0-148			0.568	28
1,1-Dichloroethene	0.0273	U	0.0169	0.0168	61.8	61.4	1	10.0-150			0.638	31
cis-1,2-Dichloroethene	0.0273	U	0.0175	0.0168	64.4	61.7	1	16.0-145			4.24	28
trans-1,2-Dichloroethene	0.0273	U	0.0155	0.0158	56.8	58.1	1	11.0-142			2.23	29
Tetrachloroethene	0.0273	U	0.0174	0.0174	63.9	64.0	1	10.0-144			0.0911	32
Trichloroethene	0.0273	U	0.0170	0.0169	62.4	61.9	1	11.0-148			0.890	29

L969937-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L969937-01 02/14/18 13:44 • (MS) R3286282-4 02/14/18 14:04 • (MSD) R3286282-5 02/14/18 14:23

Analyte	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Vinyl chloride	0.0273	U	0.0129	0.0136	47.2	49.9	1	10.0-150			5.58	29
(S) Toluene-d8					*98.6*	*98.4*		*80.0-120*				
(S) Dibromofluoromethane					*107*	*106*		*74.0-131*				
(S) 4-Bromofluorobenzene					*100*	*95.7*		*64.0-132*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.

Succeed Environmental Consulting

6028 NE 49th Avenue
Portland, OR 97218

Billing Information:
Andrew Blake
6028 NE 49th Ave.
Portland, OR 97218

Pres Chk

Report to: Andrew Blake

Email To: ablake@succeed-env.com

Project Description:

City/State Collected:

Phone: 971-371-0404
Fax:

Client Project # HE-1

Lab Project # SUCENVPOR-HE1

Collected by (print): Andrew Blake

Site/Facility ID # —

P.O. # —

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
X Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Quote # yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260C VOCs 40ml/NaHS04/Syr/MeOH	dry wt,voc screen 2ozClr-NoPres	Remarks	Sample # (lab only)
DP-9(24.0-26.0)	—	SS	—	2/13/18	13:30	5	X	X		01
		SS				5	X	X		
		SS				5	X	X		
		SS				5	X	X		
		SS				5	X	X		
		SS				5	X	X		
		SS				5	X	X		
		SS				5	X	X		
		SS				5	X	X		
		SS				5	X	X		

Chain of Custody Page 1 of 1

ESC LAB SCIENCES
a subsidiary of Pace Analytical

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 96 9937

Table A142

Acctnum: SUCENVPOR
Template: T132035
Prelogin: P636453
TSR: 110 - Brian Ford
PB: 1/25/18 cmd

Shipped Via: FedEX Ground

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: PCE, TCE, DCE's, V.C., ~~Ferrous Fe~~

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS X FedEx __ Courier __ _____

Tracking # 7305 8954 5580

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / (No) HCL / MeoH TBR	
	2/13/18	FEDEX			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.3 °C Bottles Received: 5	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2/14/18 Time: 845	Hold: / Condition: NCF / OK

ANALYTICAL REPORT

May 23, 2018

Succeed Environmental Consulting

Sample Delivery Group:	L994831
Samples Received:	05/17/2018
Project Number:	HE-1
Description:	

Report To: Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Entire Report Reviewed By: Brian Ford

Brian Ford
Technical Service Representative

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HA-1(2.0-3.0) L994831-01 Solid

Collected by	Collected date/time	Received date/time
Andrew Blake	05/16/18 13:00	05/17/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1114476	1	05/22/18 15:12	05/22/18 15:21	KS
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1113450	1.13	05/16/18 13:00	05/19/18 02:13	JAH

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	97.4		1	05/22/2018 15:21	WG1114476

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
1,1-Dichloroethene	U		0.000580	0.00290	1.13	05/19/2018 02:13	WG1113450
cis-1,2-Dichloroethene	U		0.000801	0.00290	1.13	05/19/2018 02:13	WG1113450
trans-1,2-Dichloroethene	U		0.00166	0.00580	1.13	05/19/2018 02:13	WG1113450
Tetrachloroethene	0.0136		0.000812	0.00290	1.13	05/19/2018 02:13	WG1113450
Trichloroethene	U		0.000464	0.00116	1.13	05/19/2018 02:13	WG1113450
Vinyl chloride	U		0.000792	0.00290	1.13	05/19/2018 02:13	WG1113450
(S) Toluene-d8	*118*			*80.0-120*		*05/19/2018 02:13*	WG1113450
(S) Dibromofluoromethane	*91.0*			*74.0-131*		*05/19/2018 02:13*	WG1113450
(S) 4-Bromofluorobenzene	*102*			*64.0-132*		*05/19/2018 02:13*	WG1113450

Method Blank (MB)

(MB) R3312290-1 05/22/18 15:21

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.00100			

L994835-01 Original Sample (OS) • Duplicate (DUP)

(OS) L994835-01 05/22/18 15:21 • (DUP) R3312290-3 05/22/18 15:21

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	80.4	79.9	1	0.629		5

Laboratory Control Sample (LCS)

(LCS) R3312290-2 05/22/18 15:21

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3311428-3 05/18/18 22:51

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1,1-Dichloroethene	U		0.000500	0.00250
cis-1,2-Dichloroethene	U		0.000690	0.00250
trans-1,2-Dichloroethene	U		0.00143	0.00500
Tetrachloroethene	U		0.000700	0.00250
Trichloroethene	U		0.000400	0.00100
Vinyl chloride	U		0.000683	0.00250
(S) Toluene-d8	*116*			*80.0-120*
(S) Dibromofluoromethane	*79.8*			*74.0-131*
(S) 4-Bromofluorobenzene	*106*			*64.0-132*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3311428-1 05/18/18 20:38 • (LCSD) R3311428-2 05/18/18 20:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,1-Dichloroethene	0.125	0.115	0.114	92.0	90.9	60.6-133			1.15	20
cis-1,2-Dichloroethene	0.125	0.109	0.109	87.2	87.2	76.1-121			0.0716	20
trans-1,2-Dichloroethene	0.125	0.100	0.103	80.2	82.2	70.7-124			2.46	20
Tetrachloroethene	0.125	0.149	0.154	119	123	71.1-133			3.18	20
Trichloroethene	0.125	0.130	0.138	104	111	77.2-122			6.58	20
Vinyl chloride	0.125	0.101	0.106	81.0	85.0	58.4-134			4.81	20
(S) Toluene-d8				*109*	*116*	*80.0-120*				
(S) Dibromofluoromethane				*79.7*	*90.7*	*74.0-131*				
(S) 4-Bromofluorobenzene				*106*	*104*	*64.0-132*				

L995036-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L995036-07 05/19/18 06:00 • (MS) R3311428-4 05/18/18 23:26 • (MSD) R3311428-5 05/18/18 23:47

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1,1-Dichloroethene	0.125	U	0.121	0.116	96.8	93.2	1	36.1-142			3.84	25.6
cis-1,2-Dichloroethene	0.125	U	0.114	0.112	91.1	89.4	1	50.6-133			1.88	23
trans-1,2-Dichloroethene	0.125	U	0.116	0.118	93.1	94.2	1	43.8-135			1.23	24.8
Tetrachloroethene	0.125	U	0.164	0.170	131	136	1	37.7-140			3.56	29.2
Trichloroethene	0.125	U	0.119	0.128	95.2	103	1	48.0-132			7.42	24.8
Vinyl chloride	0.125	U	0.116	0.125	92.6	99.6	1	32.0-146			7.35	26.3
(S) Toluene-d8					*112*	*113*		*80.0-120*				
(S) Dibromofluoromethane					*110*	*92.0*		*74.0-131*				
(S) 4-Bromofluorobenzene					*107*	*104*		*64.0-132*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.

Succeed Environmental Consulting

6028 NE 49th Avenue
Portland, OR 97218

Billing Information:
Andrew Blake
6028 NE 49th Ave.
Portland, OR 97218

Pres Chk

Report to: Andrew Blake

Email To: ablake@succeed-env.com

Project Description:

City/State Collected:

Phone: 971-371-0404
Fax:

Client Project # HE-1

Lab Project # SUCENVPOR-HE1

Collected by (print): Andrew Blake

Site/Facility ID # —

P.O. # —

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day X Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote # —

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260C VOCs 40ml/NaHS04/Syr/MeOH	dry wt,voc screen 2ozClr-NoPres	Analysis / Container / Preservative	Remarks	Sample # (lab only)
HA-1 (2.0-3.0)	—	SS	—	5/16/18	13:00	5	X	X			-01
		SS				5	X	X			
		SS				5	X	X			
		SS				5	X	X			
		SS				5	X	X			
		SS				5	X	X			
		SS				5	X	X			
		SS				5	X	X			
		SS				5	X	X			
		SS				5	X	X			

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
a subsidiary of Pace Analytical

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 994831

D087

Acctnum: SUCENVPOR
Template: T132035
Prelogin: P636453
TSR: 110 - Brian Ford
PB: 1/25/18 mw
Shipped Via: FedEx Ground

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks: Analyze PCE, TCE, DCE's, VC only. Thanks!

pH ___ Temp ___
Flow ___ Other ___

Samples returned via:
__ UPS X FedEx __ Courier

Tracking # 4196 3255 6718

Sample Receipt Checklist
COC Seal Present/Intact: NP __Y __N
COC Signed/Accurate: ✓ __Y __N
Bottles arrive intact: ✓ __Y __N
Correct bottles used: ✓ __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	5/16/18	FEDEX	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: 2.63 °C Bottles Received: 5

Date: 5/17/18 Time: 8:45

If preservation required by Login: Date/Time

Hold: Condition: NCF / OK

ANALYTICAL REPORT

February 26, 2018

Succeed Environmental Consulting

Sample Delivery Group:	L970988
Samples Received:	02/08/2018
Project Number:	HE-1
Description:	

Report To: Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Entire Report Reviewed By: Brian Ford

Brian Ford
Technical Service Representative

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DP1(6.0-8.0) L970988-01 Solid

Collected by: Andrew Blake | Collected date/time: 02/07/18 11:35 | Received date/time: 02/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1075435	1	02/20/18 15:38	02/20/18 15:50	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1074889	1	02/07/18 11:35	02/18/18 18:34	BMB

DP6(5.0-7.0) L970988-02 Solid

Collected by: Andrew Blake | Collected date/time: 02/07/18 18:05 | Received date/time: 02/09/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1075435	1	02/20/18 15:38	02/20/18 15:50	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1074889	1	02/07/18 18:05	02/18/18 18:53	BMB

DP7(5.0-7.0) L970988-03 Solid

Collected by: Andrew Blake | Collected date/time: 02/09/18 09:30 | Received date/time: 02/10/18 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1075435	1	02/20/18 15:38	02/20/18 15:50	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1075148	1	02/09/18 09:30	02/25/18 12:29	DWR

DP8(6.0-8.0) L970988-04 Solid

Collected by: Andrew Blake | Collected date/time: 02/09/18 12:00 | Received date/time: 02/10/18 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1075435	1	02/20/18 15:38	02/20/18 15:50	KDW
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1075148	1	02/09/18 12:00	02/19/18 15:36	BMB

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	65.0		1	02/20/2018 15:50	WG1075435

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000352	0.00769	1	02/18/2018 18:34	WG1074889
1,1-Dichloroethene	U		0.000466	0.00154	1	02/18/2018 18:34	WG1074889
cis-1,2-Dichloroethene	U		0.000362	0.00154	1	02/18/2018 18:34	WG1074889
trans-1,2-Dichloroethene	U		0.000406	0.00154	1	02/18/2018 18:34	WG1074889
Tetrachloroethene	U		0.000425	0.00154	1	02/18/2018 18:34	WG1074889
Trichloroethene	U		0.000429	0.00154	1	02/18/2018 18:34	WG1074889
Vinyl chloride	U		0.000448	0.00154	1	02/18/2018 18:34	WG1074889
(S) Toluene-d8	*101*			*80.0-120*		*02/18/2018 18:34*	WG1074889
(S) Dibromofluoromethane	*103*			*74.0-131*		*02/18/2018 18:34*	WG1074889
(S) 4-Bromofluorobenzene	*94.2*			*64.0-132*		*02/18/2018 18:34*	WG1074889

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	98.3		1	02/20/2018 15:50	WG1075435

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000233	0.00509	1	02/18/2018 18:53	WG1074889
1,1-Dichloroethene	U		0.000308	0.00102	1	02/18/2018 18:53	WG1074889
cis-1,2-Dichloroethene	U		0.000239	0.00102	1	02/18/2018 18:53	WG1074889
trans-1,2-Dichloroethene	U		0.000269	0.00102	1	02/18/2018 18:53	WG1074889
Tetrachloroethene	U		0.000281	0.00102	1	02/18/2018 18:53	WG1074889
Trichloroethene	U		0.000284	0.00102	1	02/18/2018 18:53	WG1074889
Vinyl chloride	U		0.000296	0.00102	1	02/18/2018 18:53	WG1074889
(S) Toluene-d8	*105*			*80.0-120*		*02/18/2018 18:53*	WG1074889
(S) Dibromofluoromethane	*102*			*74.0-131*		*02/18/2018 18:53*	WG1074889
(S) 4-Bromofluorobenzene	*93.5*			*64.0-132*		*02/18/2018 18:53*	WG1074889

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	97.2		1	02/20/2018 15:50	WG1075435

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000236	0.00514	1	02/25/2018 12:29	WG1075148
1,1-Dichloroethene	U		0.000312	0.00103	1	02/25/2018 12:29	WG1075148
cis-1,2-Dichloroethene	U		0.000242	0.00103	1	02/25/2018 12:29	WG1075148
trans-1,2-Dichloroethene	U		0.000272	0.00103	1	02/25/2018 12:29	WG1075148
Tetrachloroethene	U		0.000284	0.00103	1	02/25/2018 12:29	WG1075148
Trichloroethene	U		0.000287	0.00103	1	02/25/2018 12:29	WG1075148
Vinyl chloride	U		0.000299	0.00103	1	02/25/2018 12:29	WG1075148
(S) Toluene-d8	*93.9*			*80.0-120*		*02/25/2018 12:29*	WG1075148
(S) Dibromofluoromethane	*113*			*74.0-131*		*02/25/2018 12:29*	WG1075148
(S) 4-Bromofluorobenzene	*103*			*64.0-132*		*02/25/2018 12:29*	WG1075148

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	85.3		1	02/20/2018 15:50	WG1075435

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloroform	U		0.000269	0.00586	1	02/19/2018 15:36	WG1075148
1,1-Dichloroethene	U		0.000355	0.00117	1	02/19/2018 15:36	WG1075148
cis-1,2-Dichloroethene	U		0.000276	0.00117	1	02/19/2018 15:36	WG1075148
trans-1,2-Dichloroethene	U		0.000310	0.00117	1	02/19/2018 15:36	WG1075148
Tetrachloroethene	U		0.000324	0.00117	1	02/19/2018 15:36	WG1075148
Trichloroethene	U		0.000327	0.00117	1	02/19/2018 15:36	WG1075148
Vinyl chloride	U		0.000341	0.00117	1	02/19/2018 15:36	WG1075148
(S) Toluene-d8	*94.4*			*80.0-120*		*02/19/2018 15:36*	WG1075148
(S) Dibromofluoromethane	*105*			*74.0-131*		*02/19/2018 15:36*	WG1075148
(S) 4-Bromofluorobenzene	*95.4*			*64.0-132*		*02/19/2018 15:36*	WG1075148

Method Blank (MB)

(MB) R3287859-1 02/20/18 15:50

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.00200			

L970732-02 Original Sample (OS) • Duplicate (DUP)

(OS) L970732-02 02/20/18 15:50 • (DUP) R3287859-3 02/20/18 15:50

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	95.2	94.2	1	1.05		5

Laboratory Control Sample (LCS)

(LCS) R3287859-2 02/20/18 15:50

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	99.9	85.0-115	

Method Blank (MB)

(MB) R3288010-3 02/18/18 13:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloroform	U		0.000229	0.00500
1,1-Dichloroethene	U		0.000303	0.00100
cis-1,2-Dichloroethene	U		0.000235	0.00100
trans-1,2-Dichloroethene	U		0.000264	0.00100
Tetrachloroethene	U		0.000276	0.00100
Trichloroethene	U		0.000279	0.00100
Vinyl chloride	U		0.000291	0.00100
(S) Toluene-d8	*109*			*80.0-120*
(S) Dibromofluoromethane	*97.2*			*74.0-131*
(S) 4-Bromofluorobenzene	*94.5*			*64.0-132*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3288010-1 02/18/18 11:39 • (LCSD) R3288010-2 02/18/18 11:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloroform	0.0250	0.0262	0.0268	105	107	73.0-123			2.06	20
1,1-Dichloroethene	0.0250	0.0253	0.0255	101	102	63.0-131			0.793	20
cis-1,2-Dichloroethene	0.0250	0.0256	0.0256	103	102	74.0-123			0.299	20
trans-1,2-Dichloroethene	0.0250	0.0252	0.0244	101	97.5	72.0-122			3.27	20
Tetrachloroethene	0.0250	0.0296	0.0284	119	114	70.0-127			4.23	20
Trichloroethene	0.0250	0.0285	0.0287	114	115	79.0-120			0.668	20
Vinyl chloride	0.0250	0.0279	0.0267	112	107	63.0-134			4.39	20
(S) Toluene-d8				*106*	*111*	*80.0-120*				
(S) Dibromofluoromethane				*99.7*	*99.7*	*74.0-131*				
(S) 4-Bromofluorobenzene				*99.0*	*97.3*	*64.0-132*				

L970969-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L970969-05 02/18/18 20:31 • (MS) R3288010-4 02/18/18 20:51 • (MSD) R3288010-5 02/18/18 21:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloroform	0.0250	ND	28.5	32.0	114	128	1000	18.0-148			11.6	28
1,1-Dichloroethene	0.0250	ND	21.9	24.9	87.5	99.4	1000	10.0-150			12.8	31
cis-1,2-Dichloroethene	0.0250	ND	25.7	29.8	103	119	1000	16.0-145			14.5	28
trans-1,2-Dichloroethene	0.0250	ND	20.8	23.4	83.0	93.8	1000	11.0-142			12.2	29
Tetrachloroethene	0.0250	ND	25.5	31.1	102	124	1000	10.0-144			19.6	32
Trichloroethene	0.0250	ND	26.5	30.2	106	121	1000	11.0-148			12.9	29
Vinyl chloride	0.0250	ND	19.5	22.5	78.2	90.2	1000	10.0-150			14.3	29

L970969-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L970969-05 02/18/18 20:31 • (MS) R3288010-4 02/18/18 20:51 • (MSD) R3288010-5 02/18/18 21:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
(S) Toluene-d8					*102*	*105*		*80.0-120*				
(S) Dibromofluoromethane					*99.0*	*99.6*		*74.0-131*				
(S) 4-Bromofluorobenzene					*101*	*98.4*		*64.0-132*				

Method Blank (MB)

(MB) R3288748-3 02/19/18 13:10

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloroform	U		0.000229	0.00500
1,1-Dichloroethene	U		0.000303	0.00100
cis-1,2-Dichloroethene	U		0.000235	0.00100
trans-1,2-Dichloroethene	U		0.000264	0.00100
Tetrachloroethene	U		0.000276	0.00100
Trichloroethene	U		0.000279	0.00100
Vinyl chloride	U		0.000291	0.00100
(S) Toluene-d8	*103*			*80.0-120*
(S) Dibromofluoromethane	*94.2*			*74.0-131*
(S) 4-Bromofluorobenzene	*97.2*			*64.0-132*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3288748-1 02/19/18 11:21 • (LCSD) R3288748-2 02/19/18 11:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloroform	0.0250	0.0257	0.0267	103	107	73.0-123			3.86	20
1,1-Dichloroethene	0.0250	0.0249	0.0259	99.6	104	63.0-131			3.97	20
cis-1,2-Dichloroethene	0.0250	0.0249	0.0255	99.5	102	74.0-123			2.37	20
trans-1,2-Dichloroethene	0.0250	0.0243	0.0258	97.4	103	72.0-122			5.98	20
Tetrachloroethene	0.0250	0.0272	0.0282	109	113	70.0-127			3.35	20
Trichloroethene	0.0250	0.0263	0.0273	105	109	79.0-120			3.83	20
Vinyl chloride	0.0250	0.0235	0.0245	93.8	98.0	63.0-134			4.39	20
(S) Toluene-d8				*104*	*103*	*80.0-120*				
(S) Dibromofluoromethane				*95.4*	*94.8*	*74.0-131*				
(S) 4-Bromofluorobenzene				*95.9*	*95.5*	*64.0-132*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.

Succeed Environmental Consulting

6028 NE 49th Avenue
Portland, OR 97218

Billing Information:
Andrew Blake
6028 NE 49th Ave.
Portland, OR 97218

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 2

ESC LAB SCIENCES

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

Report to: Andrew Blake

Email To: ablake@succeed-env.com

Project Description:

City/State Collected: Tacoma, WA

Phone: 971-371-0404
Fax:

Client Project #: HE-1

Lab Project #: SUCENVPOR-HE1

L#: 968786 N 2/16/18

Table #: C113 L970988

Collected by (print): Andrew Blake

Site/Facility ID #:

P.O. #: —

Collected by (signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
X Three Day

Quote #: — 1/cs.

Date Results Needed

Immediately Packed on Ice N ___ Y X

Acctnum: SUCENVPOR
Template: T132035
Prelogin: P636453
TSR: 110 - Brian Ford
PB: 1/25/18 mf
Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260C VOCs 40ml/NaHSO4/Syr/MeOH*	dry wt,voc screen 2ozClr-NoPres		Remarks	Sample # (lab only)
DP-1 (1.0-3.0)	—	SS	—	2/7/18	11:30	5	X	X	Hold		
DP-1 (6.0-8.0)	—	SS	—	↓	11:35	5	X	X	Hold		
DP-1 (11.0-13.0)	—	SS	—	↓	11:39	5	X	X	Hold		-01
DP-1 (15.0-17.0)	—	SS	—	↓	11:40	5	X	X	Hold		
DP-1 (22.0-24.0)	—	SS	—	↓	11:45	5	X	X	Hold		
DP-2 (1.0-3.0)	—	SS	—		12:30	5	X	X	Hold		
DP-2 (6.0-8.0)	—	SS	—		12:35	5	X	X	OK		
DP-2 (10.0-12.0)	—	SS	—		12:40	5	X	X	OK		-01
DP-2 (15.0-17.0)	—	SS	—		12:45	5	X	X	OK		-02
DP-2 (23.0-25.0)	—	SS	—		12:50	5	X	X	Hold		-03

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other ______

Remarks: * Analyze specifically for PCE, TCE, DCEs, VC and Chloroform

pH ______ Temp ______
Flow ______ Other ______

Samples returned via:
___ UPS X FedEx ___ Courier ___ ______

Tracking # 4196 3261 8547 - 8536

Sample Receipt Checklist
COC Seal Present/Intact: _NP _Y _N
COC Signed/Accurate: _Y _N
Bottles arrive intact: _Y _N
Correct bottles used: _Y _N
Sufficient volume sent: _Y _N
If Applicable
VOA Zero Headspace: _Y _N
Preservation Correct/Checked: _Y _N

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)		
[signature]	2/7/18	FEDEX		Trip Blank Received: Yes / No HCL / MeoH TBR	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 5.2 °C	Bottles Received: 89
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) Kelly Allen 841	Date: 2/8/18	Time: 0845

If preservation required by Login: Date/Time

2-046

Condition: NCF / OK

Succeed Environmental Consulting

6028 NE 49th Avenue
Portland, OR 97218

Billing Information:
Andrew Blake
6028 NE 49th Ave.
Portland, OR 97218

Pres Chk

Report to: Andrew Blake

Email To: ablake@succeed-env.com

Project Description: —

City/State Collected: Tacoma, WA

Phone: 971-371-0404
Fax:

Client Project # HE-1

Lab Project # SUCENVPOR-HE1

Collected by (print): Andrew Blake

Site/Facility ID # —

P.O. # —

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Quote # Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260C VOCs 40ml/NaHSO4/Syr/MeOH	dry wt,voc screen 2ozClr-NoPres									
DP-5 (17.0-19.0)	—	SS	—	2/7/18	17:00	5	X	X									
DP-5 (23.0-25.0)	—	SS	—	2/7/18	17:10	5	X	X									
DP-6 (1.0-3.0)	—	SS	—		18:00	5	X	X	Hold								
DP-6 (5.0-7.0)	—	SS	—		14:05	5	X	X									
DP-6 (12.0-14.0)	—	SS	—		18:10	5	X	X									
DP-6 (17.0-19.0)	—	SS	—		18:20	5	X	X	Hold								
DP-6 (23.0-25.0)	—	SS	—		18:25	5	X	X									
		SS				5	X	X									
		SS				5	X	X									
		SS				5	X	X									

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

ESC LAB SCIENCES
a subsidiary of Pace
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L970988 N 2/16/18

Table # L970988

Acctnum: SUCENVPOR

Template: T132035

Prelogin: P636453

TSR: 110 - Brian Ford

PB: 1/25/18 VNS

Shipped Via: FedEX Ground

Remarks	Sample # (lab only)
	-01
	-02
	-03
	-04
-03 -04 -	
-05	-05
	-06

-02

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

pH ____ Temp ____

Flow ____ Other ____

Samples returned via: ___ UPS ___ FedEx ___ Courier ___ ____

Tracking # 4219 9203 4510

Sample Receipt Checklist
COC Seal Present/Intact: ___Y ___N
COC Signed/Accurate: ___Y ___N
Bottles arrive intact: ___Y ___N
Correct bottles used: ___Y ___N
Sufficient volume sent: ___Y ___N
If Applicable
VOA Zero Headspace: ___Y ___N
Preservation Correct/Checked: ___Y ___N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	2/8/18	FED EX	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / (No) HCL / MeoH TBR

Temp: 2.8 °C Bottles Received: 35

Date: 2-9-18 Time: 0845

If preservation required by Login: Date/Time

2-070

Condition: NCF / (OK)

Succeed Environmental Consulting

6028 NE 49th Avenue
Portland, OR 97218

Billing Information:
Andrew Blake
6028 NE 49th Ave.
Portland, OR 97218

Pres Chk

Report to: Andrew Blake

Email To: ablake@succeed-env.com

Project Description:

City/State Collected:

Phone: 971-371-0404
Fax:

Client Project # HE-1

Lab Project # SUCENVPOR-HE1

Collected by (print): Andrew Blake

Site/Facility ID # —

P.O. # —

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
X Three Day

Quote # Yes - HE-1

Date Results Needed

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

ESC LAB SCIENCES
a subsidiary of Pace Analytical
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L469425

N 2/16/18

H001

L470938

Acctnum: SUCENVPOR
Template: T132035
Prelogin: P636453
TSR: 110 - Brian Ford
PB: 1/25/18 mm

Shipped Via: FedEx Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260C VOCs 40ml/NaHSO4/Syr/MeOH	dry wt, voc screen 2oz Clr-NoPres		Remarks	Sample # (lab only)
DP-7 (1.0-3.0)		SS		2/9/18	9:25	5	X	X	HCl &		
DP-7 (5.0-7.0)		SS			9:30	5	X	X	HCl		
DP-7 (11.0-13.0)		<			9:35	5	X	X			-03
DP-7 (17.0-19.0)					9:40	5			HCl		-01
DP-7 (22.0-24.0)					9:45	5	X	X			
DP-8 (1.0-2.5)					11:55	5			HCl		-02
DP-8 (6.0-8.0)					12:00	5			HCl		
DP-8 (14.0-15.0)					12:25	5	X	X			-04
DP-8 (18.0-20.0)					12:10	5	X	X			-05
											-06

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

pH ___ Temp ___
Flow ___ Other ___

Samples returned via:
__ UPS __ FedEx __ Courier

Tracking # 7884 4206 3998

Sample Receipt Checklist
COC Seal Present/Intact: Y N
COC Signed/Accurate: Y N
Bottles Arrive Intact: Y N
Correct Bottles Used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	2/9/18	FedEx	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Kelli Matthews

Trip Blank Received: Yes / No
HCl / MeOH
TBR

Temp: 4.5 °C Bottles Received: 45

If preservation required by Login: Date/Time

Date: 2/10/18 Time: 0900

2-063

Condition: NCF / OK

Andy Vann

From: Brian Ford
Sent: Friday, February 16, 2018 9:37 AM
To: Login; Sample Storage; Brian Ford
Subject: *SUCENVPOR* log off hold

Please log the following off hold for V8260C and TS. Can be logged to one SDG as R5 due 02/23.

Hold #2-046 (COC L968786)
DP-1 (6.0-8.0)

Hold 2-070 (COC L969558)
DP-6(5.0-7.0)

Hold=2-063 (COC L969428)
DP-7 (5.0-7.0)
DP-8 (6.0-8.0)

Thanks,

Brian Ford
Technical Service Representative
ESC Lab Sciences-a subsidiary of Pace Analytical
12065 Lebanon Road | Mt. Juliet, TN 37122
615.773.9772
bford@esclabsciences.com | www.esclabsciences.com

ANALYTICAL REPORT

February 15, 2018

Succeed Environmental Consulting

Sample Delivery Group:	L969949
Samples Received:	02/14/2018
Project Number:	HE-1
Description:	

Report To: Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Entire Report Reviewed By: Brian Ford

Brian Ford
Technical Service Representative

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Sc: Sample Chain of Custody 9

MW -3D L969949-01 GW

Collected by	Collected date/time	Received date/time
Andrew Blake	02/13/18 14:45	02/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1071887	1	02/14/18 17:37	02/14/18 17:37	BMB

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Technical Service Representative

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloroform	0.324	J	0.0860	0.500	1	02/14/2018 17:37	WG1071887
1,1-Dichloroethene	U		0.188	0.500	1	02/14/2018 17:37	WG1071887
cis-1,2-Dichloroethene	U		0.0933	0.500	1	02/14/2018 17:37	WG1071887
trans-1,2-Dichloroethene	U		0.152	0.500	1	02/14/2018 17:37	WG1071887
Tetrachloroethene	0.227	J	0.199	0.500	1	02/14/2018 17:37	WG1071887
Trichloroethene	U		0.153	0.500	1	02/14/2018 17:37	WG1071887
Vinyl chloride	U		0.118	0.500	1	02/14/2018 17:37	WG1071887
(S) Toluene-d8	*109*			*80.0-120*		*02/14/2018 17:37*	WG1071887
(S) Dibromofluoromethane	*102*			*76.0-123*		*02/14/2018 17:37*	WG1071887
(S) 4-Bromofluorobenzene	*116*			*80.0-120*		*02/14/2018 17:37*	WG1071887

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3286337-3 02/14/18 10:42

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloroform	U		0.0860	0.500
1,1-Dichloroethene	U		0.188	0.500
cis-1,2-Dichloroethene	U		0.0933	0.500
trans-1,2-Dichloroethene	U		0.152	0.500
Tetrachloroethene	U		0.199	0.500
Trichloroethene	U		0.153	0.500
Vinyl chloride	U		0.118	0.500
(S) Toluene-d8	*103*			*80.0-120*
(S) Dibromofluoromethane	*104*			*76.0-123*
(S) 4-Bromofluorobenzene	*110*			*80.0-120*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3286337-1 02/14/18 09:26 • (LCSD) R3286337-4 02/14/18 11:02

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloroform	25.0	28.3	26.2	113	105	72.0-121			7.70	20
1,1-Dichloroethene	25.0	24.4	22.0	97.6	87.9	64.0-129			10.5	20
cis-1,2-Dichloroethene	25.0	24.4	22.6	97.6	90.2	73.0-120			7.82	20
trans-1,2-Dichloroethene	25.0	25.8	22.8	103	91.2	71.0-121			12.5	20
Tetrachloroethene	25.0	25.8	23.5	103	93.9	70.0-127			9.28	20
Trichloroethene	25.0	26.4	23.6	106	94.5	78.0-120			11.1	20
Vinyl chloride	25.0	27.7	24.6	111	98.4	64.0-133			11.9	20
(S) Toluene-d8				*102*	*99.8*	*80.0-120*				
(S) Dibromofluoromethane				*103*	*103*	*76.0-123*				
(S) 4-Bromofluorobenzene				*102*	*108*	*80.0-120*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.

Succeed Environmental Consulting

Billing information:
Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Pres Chk

Report to: **Andrew Blake**

Email To: **ablake@succeed-env.com**

Project Description:

City/State Collected:

Phone: **971-371-0404**
Fax:

Client Project #

Lab Project #
Sucenvpor - NE-1

Collected by (print): **Andrew Blake**

Site/Facility ID #
—

P.O. #
—

Collected by (signature):

Immediately Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
X Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote # Yes

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
MW-3D	—	GW	—	2/13/18	1145	3

Analysis / Container / Preservative

NWOCs by EPA 5260 *

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 969949

H043

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Remarks	Sample # (lab only)
	01

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:
PCE, TCE, DCEs, VC, & Chloroform

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS ✓ FedEx __ Courier _____

Tracking # 6827 1109 5702

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	2/13/18	FEDEX	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) 863

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: 1.4 °C Bottles Received: 3

Date: 2/14/18 Time: 0845

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Tuesday, November 28, 2017

Andrew S. Blake, R.G., L.G.
Succeed Environmental Consulting
6028 NE 49th Ave.
Portland, OR 97218

RE: HE-1-01 / [none]

Enclosed are the results of analyses for work order A7K0815, which was received by the laboratory on 11/20/2017 at 9:32:00AM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Apex Laboratories

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	A7K0815-01	Water	11/16/17 17:45	11/20/17 09:32
MW-2	A7K0815-02	Water	11/16/17 16:10	11/20/17 09:32
MW-3	A7K0815-03	Water	11/16/17 15:00	11/20/17 09:32
MW-4	A7K0815-04	Water	11/16/17 16:50	11/20/17 09:32

Apex Laboratories

Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
MW-1 (A7K0815-01RE1)			**Matrix: Water**		**Batch: 7111035**			
Bromobenzene	ND	0.250	0.500	ug/L	1	11/27/17 11:18	EPA 8260C	
Bromochloromethane	ND	0.500	1.00	"	"	"	"	
Bromodichloromethane	ND	0.500	1.00	"	"	"	"	
Bromoform	ND	0.500	1.00	"	"	"	"	
Bromomethane	ND	5.00	5.00	"	"	"	"	
Carbon tetrachloride	ND	0.500	1.00	"	"	"	"	
Chlorobenzene	ND	0.250	0.500	"	"	"	"	
Chloroethane	ND	5.00	5.00	"	"	"	"	
Chloroform	**4.32**	0.500	1.00	"	"	"	"	
Chloromethane	ND	2.50	5.00	"	"	"	"	
2-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
4-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
Dibromochloromethane	ND	0.500	1.00	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	"	"	
Dibromomethane	ND	0.500	1.00	"	"	"	"	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloroethane	ND	0.200	0.400	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	"	"	
1,1-Dichloroethene	ND	0.200	0.400	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
1,2-Dichloropropane	ND	0.250	0.500	"	"	"	"	
1,3-Dichloropropane	ND	0.500	1.00	"	"	"	"	
2,2-Dichloropropane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloropropene	ND	0.500	1.00	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
Hexachlorobutadiene	ND	2.50	5.00	"	"	"	"	
Methylene chloride	ND	1.50	3.00	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	"	"	

Apex Laboratories

Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
MW-1 (A7K0815-01RE1)			**Matrix: Water**		**Batch: 7111035**			
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	"	EPA 8260C	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Trichlorofluoromethane	ND	1.00	2.00	"	"	"	"	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 109 %*	*Limits: 80-120 %*	"	"	"	
Toluene-d8 (Surr)			*98 %*	*Limits: 80-120 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*93 %*	*Limits: 80-120 %*	"	"	"	
MW-2 (A7K0815-02RE1)			**Matrix: Water**		**Batch: 7111035**			
Bromobenzene	ND	0.250	0.500	ug/L	1	11/27/17 11:46	EPA 8260C	
Bromochloromethane	ND	0.500	1.00	"	"	"	"	
Bromodichloromethane	ND	0.500	1.00	"	"	"	"	
Bromoform	ND	0.500	1.00	"	"	"	"	
Bromomethane	ND	5.00	5.00	"	"	"	"	
Carbon tetrachloride	ND	0.500	1.00	"	"	"	"	
Chlorobenzene	ND	0.250	0.500	"	"	"	"	
Chloroethane	ND	5.00	5.00	"	"	"	"	
Chloroform	ND	0.500	1.00	"	"	"	"	
Chloromethane	ND	2.50	5.00	"	"	"	"	
2-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
4-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
Dibromochloromethane	ND	0.500	1.00	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	"	"	
Dibromomethane	ND	0.500	1.00	"	"	"	"	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloroethane	ND	0.200	0.400	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	"	"	

Apex Laboratories

Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
MW-2 (A7K0815-02RE1)			**Matrix: Water**		**Batch: 7111035**			
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	"	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
1,2-Dichloropropane	ND	0.250	0.500	"	"	"	"	
1,3-Dichloropropane	ND	0.500	1.00	"	"	"	"	
2,2-Dichloropropane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloropropene	ND	0.500	1.00	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
Hexachlorobutadiene	ND	2.50	5.00	"	"	"	"	
Methylene chloride	ND	1.50	3.00	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	"	"	
Tetrachloroethene (PCE)	**2.33**	0.200	0.400	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Trichlorofluoromethane	ND	1.00	2.00	"	"	"	"	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 108 %*	*Limits: 80-120 %*	"	"	"	
Toluene-d8 (Surr)			*98 %*	*Limits: 80-120 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*94 %*	*Limits: 80-120 %*	"	"	"	

Apex Laboratories

Philip Nerenberg, Lab Director

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12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
MW-3 (A7K0815-03RE1)			**Matrix: Water**		**Batch: 7111035**			
Bromobenzene	ND	0.250	0.500	ug/L	1	11/27/17 12:15	EPA 8260C	
Bromochloromethane	ND	0.500	1.00	"	"	"	"	
Bromodichloromethane	ND	0.500	1.00	"	"	"	"	
Bromoform	ND	0.500	1.00	"	"	"	"	
Bromomethane	ND	5.00	5.00	"	"	"	"	
Carbon tetrachloride	ND	0.500	1.00	"	"	"	"	
Chlorobenzene	ND	0.250	0.500	"	"	"	"	
Chloroethane	ND	5.00	5.00	"	"	"	"	
Chloroform	ND	0.500	1.00	"	"	"	"	
Chloromethane	ND	2.50	5.00	"	"	"	"	
2-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
4-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
Dibromochloromethane	ND	0.500	1.00	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	"	"	
Dibromomethane	ND	0.500	1.00	"	"	"	"	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloroethane	ND	0.200	0.400	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	"	"	
1,1-Dichloroethene	ND	0.200	0.400	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
1,2-Dichloropropane	ND	0.250	0.500	"	"	"	"	
1,3-Dichloropropane	ND	0.500	1.00	"	"	"	"	
2,2-Dichloropropane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloropropene	ND	0.500	1.00	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
Hexachlorobutadiene	ND	2.50	5.00	"	"	"	"	
Methylene chloride	ND	1.50	3.00	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	"	"	

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Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
MW-3 (A7K0815-03RE1)			**Matrix: Water**		**Batch: 7111035**			
Tetrachloroethene (PCE)	**4.54**	0.200	0.400	ug/L	1	"	EPA 8260C	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Trichlorofluoromethane	ND	1.00	2.00	"	"	"	"	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 109 %*	*Limits: 80-120 %*	"	"	"	
Toluene-d8 (Surr)			*97 %*	*Limits: 80-120 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*95 %*	*Limits: 80-120 %*	"	"	"	
MW-4 (A7K0815-04RE1)			**Matrix: Water**		**Batch: 7111035**			
Bromobenzene	ND	0.250	0.500	ug/L	1	11/27/17 12:43	EPA 8260C	
Bromochloromethane	ND	0.500	1.00	"	"	"	"	
Bromodichloromethane	ND	0.500	1.00	"	"	"	"	
Bromoform	ND	0.500	1.00	"	"	"	"	
Bromomethane	ND	5.00	5.00	"	"	"	"	
Carbon tetrachloride	ND	0.500	1.00	"	"	"	"	
Chlorobenzene	ND	0.250	0.500	"	"	"	"	
Chloroethane	ND	5.00	5.00	"	"	"	"	
Chloroform	ND	0.500	1.00	"	"	"	"	
Chloromethane	ND	2.50	5.00	"	"	"	"	
2-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
4-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
Dibromochloromethane	ND	0.500	1.00	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	"	"	
Dibromomethane	ND	0.500	1.00	"	"	"	"	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloroethane	ND	0.200	0.400	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	"	"	

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Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
MW-4 (A7K0815-04RE1)			**Matrix: Water**		**Batch: 7111035**			
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	"	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
1,2-Dichloropropane	ND	0.250	0.500	"	"	"	"	
1,3-Dichloropropane	ND	0.500	1.00	"	"	"	"	
2,2-Dichloropropane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloropropene	ND	0.500	1.00	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
Hexachlorobutadiene	ND	2.50	5.00	"	"	"	"	
Methylene chloride	ND	1.50	3.00	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	"	"	
Tetrachloroethene (PCE)	**2.39**	0.200	0.400	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Trichlorofluoromethane	ND	1.00	2.00	"	"	"	"	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 108 %*	*Limits: 80-120 %*	"	"	"	
Toluene-d8 (Surr)			*98 %*	*Limits: 80-120 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*94 %*	*Limits: 80-120 %*	"	"	"	

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Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7111000 - EPA 5030B							**Water**					
Blank (7111000-BLK1)					Prepared: 11/22/17 11:02 Analyzed: 11/22/17 12:27							
EPA 8260C												
Bromobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Bromodichloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Bromoform	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Bromomethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	
Carbon tetrachloride	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Chlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Chloroethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	
Chloroform	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Chloromethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	
2-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
4-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Dibromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Dibromomethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1-Dichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,2-Dichloropropane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
1,3-Dichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
2,2-Dichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
Methylene chloride	ND	1.50	3.00	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7111000 - EPA 5030B									**Water**			
Blank (7111000-BLK1)					Prepared: 11/22/17 11:02 Analyzed: 11/22/17 12:27							
EPA 8260C												
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	ug/L	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 110 %*	*Limits: 80-120 %*			*Dilution: 1x*					
Toluene-d8 (Surr)			*99 %*	*80-120 %*			*"*					
4-Bromofluorobenzene (Surr)			*93 %*	*80-120 %*			*"*					
LCS (7111000-BS1)					Prepared: 11/22/17 11:02 Analyzed: 11/22/17 11:30							
EPA 8260C												
Bromobenzene	19.1	0.250	0.500	ug/L	1	20.0	---	95	80-120%	---	---	
Bromochloromethane	20.2	0.500	1.00	"	"	"	---	101	"	---	---	
Bromodichloromethane	21.6	0.500	1.00	"	"	"	---	108	"	---	---	
Bromoform	25.9	0.500	1.00	"	"	"	---	129	"	---	---	Q-56
Bromomethane	24.3	5.00	5.00	"	"	"	---	122	"	---	---	Q-56
Carbon tetrachloride	20.0	0.500	1.00	"	"	"	---	100	"	---	---	
Chlorobenzene	19.5	0.250	0.500	"	"	"	---	98	"	---	---	
Chloroethane	23.1	5.00	5.00	"	"	"	---	116	"	---	---	
Chloroform	20.4	0.500	1.00	"	"	"	---	102	"	---	---	
Chloromethane	15.9	5.00	5.00	"	"	"	---	79	"	---	---	Q-55
2-Chlorotoluene	19.3	0.500	1.00	"	"	"	---	97	"	---	---	
4-Chlorotoluene	18.4	0.500	1.00	"	"	"	---	92	"	---	---	
Dibromochloromethane	22.1	0.500	1.00	"	"	"	---	110	"	---	---	
1,2-Dibromo-3-chloropropane	21.7	2.50	5.00	"	"	"	---	108	"	---	---	
1,2-Dibromoethane (EDB)	20.4	0.250	0.500	"	"	"	---	102	"	---	---	
Dibromomethane	21.4	0.500	1.00	"	"	"	---	107	"	---	---	
1,2-Dichlorobenzene	19.7	0.250	0.500	"	"	"	---	98	"	---	---	
1,3-Dichlorobenzene	19.4	0.250	0.500	"	"	"	---	97	"	---	---	
1,4-Dichlorobenzene	19.7	0.250	0.500	"	"	"	---	98	"	---	---	

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Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7111000 - EPA 5030B									**Water**			
LCS (7111000-BS1)					Prepared: 11/22/17 11:02 Analyzed: 11/22/17 11:30							
EPA 8260C												
Dichlorodifluoromethane	15.9	0.500	1.00	ug/L	"	"	---	80	"	---	---	
1,1-Dichloroethane	19.9	0.200	0.400	"	"	"	---	100	"	---	---	
1,2-Dichloroethane (EDC)	19.8	0.200	0.400	"	"	"	---	99	"	---	---	
1,1-Dichloroethene	19.2	0.200	0.400	"	"	"	---	96	"	---	---	
cis-1,2-Dichloroethene	19.0	0.200	0.400	"	"	"	---	95	"	---	---	
trans-1,2-Dichloroethene	19.6	0.200	0.400	"	"	"	---	98	"	---	---	
1,2-Dichloropropane	20.3	0.250	0.500	"	"	"	---	101	"	---	---	
1,3-Dichloropropane	19.9	0.500	1.00	"	"	"	---	100	"	---	---	
2,2-Dichloropropane	17.9	0.500	1.00	"	"	"	---	90	"	---	---	
1,1-Dichloropropene	18.7	0.500	1.00	"	"	"	---	94	"	---	---	
cis-1,3-Dichloropropene	17.2	0.500	1.00	"	"	"	---	86	"	---	---	
trans-1,3-Dichloropropene	19.8	0.500	1.00	"	"	"	---	99	"	---	---	
Hexachlorobutadiene	18.2	2.50	5.00	"	"	"	---	91	"	---	---	
Methylene chloride	20.9	1.50	3.00	"	"	"	---	104	"	---	---	
1,1,1,2-Tetrachloroethane	21.2	0.200	0.400	"	"	"	---	106	"	---	---	
1,1,2,2-Tetrachloroethane	22.9	0.250	0.500	"	"	"	---	114	"	---	---	
Tetrachloroethene (PCE)	19.0	0.200	0.400	"	"	"	---	95	"	---	---	
1,2,3-Trichlorobenzene	20.4	1.00	2.00	"	"	"	---	102	"	---	---	
1,2,4-Trichlorobenzene	19.1	1.00	2.00	"	"	"	---	95	"	---	---	
1,1,1-Trichloroethane	19.4	0.200	0.400	"	"	"	---	97	"	---	---	
1,1,2-Trichloroethane	20.3	0.250	0.500	"	"	"	---	102	"	---	---	
Trichloroethene (TCE)	20.2	0.200	0.400	"	"	"	---	101	"	---	---	
Trichlorofluoromethane	23.0	1.00	2.00	"	"	"	---	115	"	---	---	
1,2,3-Trichloropropane	21.2	0.500	1.00	"	"	"	---	106	"	---	---	
Vinyl chloride	21.7	0.200	0.400	"	"	"	---	109	"	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 106 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*97 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*91 %*		*80-120 %*				*"*			
Matrix Spike (7111000-MS1)					Prepared: 11/22/17 11:52 Analyzed: 11/22/17 19:59							
QC Source Sample: MW-4 (A7K0815-04)												
EPA 8260C												
Bromobenzene	205	2.50	5.00	ug/L	10	200	ND	103	80-120%	---	---	
Bromochloromethane	214	5.00	10.0	"	"	"	ND	107	78-123%	---	---	

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Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7111000 - EPA 5030B							**Water**					
Matrix Spike (7111000-MS1)					Prepared: 11/22/17 11:52 Analyzed: 11/22/17 19:59							
QC Source Sample: MW-4 (A7K0815-04)												
EPA 8260C												
Bromodichloromethane	236	5.00	10.0	ug/L	"	"	ND	118	79-125%	---	---	
Bromoform	258	5.00	10.0	"	"	"	ND	129	66-130%	---	---	Q-54b
Bromomethane	277	50.0	50.0	"	"	"	ND	138	53-141%	---	---	Q-54
Carbon tetrachloride	230	5.00	10.0	"	"	"	ND	115	72-136%	---	---	
Chlorobenzene	209	2.50	5.00	"	"	"	ND	104	80-120%	---	---	
Chloroethane	260	50.0	50.0	"	"	"	ND	130	60-138%	---	---	
Chloroform	222	5.00	10.0	"	"	"	ND	111	79-124%	---	---	
Chloromethane	172	50.0	50.0	"	"	"	ND	86	50-139%	---	---	Q-54c
2-Chlorotoluene	207	5.00	10.0	"	"	"	ND	103	79-122%	---	---	
4-Chlorotoluene	199	5.00	10.0	"	"	"	ND	99	78-122%	---	---	
Dibromochloromethane	230	5.00	10.0	"	"	"	ND	115	74-126%	---	---	
1,2-Dibromo-3-chloropropane	208	25.0	50.0	"	"	"	ND	104	62-128%	---	---	
1,2-Dibromoethane (EDB)	208	2.50	5.00	"	"	"	ND	104	77-121%	---	---	
Dibromomethane	229	5.00	10.0	"	"	"	ND	115	79-123%	---	---	
1,2-Dichlorobenzene	208	2.50	5.00	"	"	"	ND	104	80-120%	---	---	
1,3-Dichlorobenzene	211	2.50	5.00	"	"	"	ND	105	"	---	---	
1,4-Dichlorobenzene	207	2.50	5.00	"	"	"	ND	104	79-120%	---	---	
Dichlorodifluoromethane	184	5.00	10.0	"	"	"	ND	92	32-152%	---	---	
1,1-Dichloroethane	218	2.00	4.00	"	"	"	ND	109	77-125%	---	---	
1,2-Dichloroethane (EDC)	213	2.00	4.00	"	"	"	ND	106	73-128%	---	---	
1,1-Dichloroethene	215	2.00	4.00	"	"	"	ND	108	71-131%	---	---	
cis-1,2-Dichloroethene	204	2.00	4.00	"	"	"	ND	102	78-123%	---	---	
trans-1,2-Dichloroethene	219	2.00	4.00	"	"	"	ND	110	75-124%	---	---	
1,2-Dichloropropane	222	2.50	5.00	"	"	"	ND	111	78-122%	---	---	
1,3-Dichloropropane	204	5.00	10.0	"	"	"	ND	102	80-120%	---	---	
2,2-Dichloropropane	147	5.00	10.0	"	"	"	ND	74	60-139%	---	---	
1,1-Dichloropropene	206	5.00	10.0	"	"	"	ND	103	79-125%	---	---	
cis-1,3-Dichloropropene	168	5.00	10.0	"	"	"	ND	84	75-124%	---	---	
trans-1,3-Dichloropropene	196	5.00	10.0	"	"	"	ND	98	73-127%	---	---	
Hexachlorobutadiene	190	25.0	50.0	"	"	"	ND	95	66-134%	---	---	
Methylene chloride	223	15.0	30.0	"	"	"	ND	112	74-124%	---	---	
1,1,1,2-Tetrachloroethane	227	2.00	4.00	"	"	"	ND	114	78-124%	---	---	
1,1,2,2-Tetrachloroethane	235	2.50	5.00	"	"	"	ND	117	71-121%	---	---	

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Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7111000 - EPA 5030B									**Water**			
Matrix Spike (7111000-MS1)					Prepared: 11/22/17 11:52 Analyzed: 11/22/17 19:59							
QC Source Sample: MW-4 (A7K0815-04)												
EPA 8260C												
Tetrachloroethene (PCE)	210	2.00	4.00	ug/L	"	"	2.10	104	74-129%	---	---	
1,2,3-Trichlorobenzene	212	10.0	20.0	"	"	"	ND	106	69-129%	---	---	
1,2,4-Trichlorobenzene	195	10.0	20.0	"	"	"	ND	98	69-130%	---	---	
1,1,1-Trichloroethane	217	2.00	4.00	"	"	"	ND	108	74-131%	---	---	
1,1,2-Trichloroethane	211	2.50	5.00	"	"	"	ND	106	80-120%	---	---	
Trichloroethene (TCE)	218	2.00	4.00	"	"	"	ND	109	79-123%	---	---	
Trichlorofluoromethane	272	10.0	20.0	"	"	"	ND	136	65-141%	---	---	
1,2,3-Trichloropropane	221	5.00	10.0	"	"	"	ND	111	73-122%	---	---	
Vinyl chloride	254	2.00	4.00	"	"	"	ND	127	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 106 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*96 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*90 %*		*80-120 %*			*"*				

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7111035 - EPA 5030B							**Water**					
Blank (7111035-BLK1)					Prepared: 11/27/17 09:26 Analyzed: 11/27/17 10:50							
EPA 8260C												
Bromobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Bromodichloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Bromoform	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Bromomethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	
Carbon tetrachloride	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Chlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Chloroethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	
Chloroform	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Chloromethane	ND	2.50	5.00	"	"	---	---	---	---	---	---	
2-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
4-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Dibromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Dibromomethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1-Dichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,2-Dichloropropane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
1,3-Dichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
2,2-Dichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
Methylene chloride	ND	1.50	3.00	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7111035 - EPA 5030B									Water			
Blank (7111035-BLK1)					Prepared: 11/27/17 09:26 Analyzed: 11/27/17 10:50							
EPA 8260C												
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	ug/L	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 108 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*98 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*95 %*		*80-120 %*				*"*			
LCS (7111035-BS1)					Prepared: 11/27/17 09:26 Analyzed: 11/27/17 09:54							
EPA 8260C												
Bromobenzene	19.7	0.250	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Bromochloromethane	20.6	0.500	1.00	"	"	"	---	103	"	---	---	
Bromodichloromethane	21.8	0.500	1.00	"	"	"	---	109	"	---	---	
Bromoform	25.3	0.500	1.00	"	"	"	---	127	"	---	---	Q-56
Bromomethane	21.2	5.00	5.00	"	"	"	---	106	"	---	---	
Carbon tetrachloride	20.9	0.500	1.00	"	"	"	---	105	"	---	---	
Chlorobenzene	19.9	0.250	0.500	"	"	"	---	99	"	---	---	
Chloroethane	23.4	5.00	5.00	"	"	"	---	117	"	---	---	
Chloroform	20.8	0.500	1.00	"	"	"	---	104	"	---	---	
Chloromethane	19.9	2.50	5.00	"	"	"	---	99	"	---	---	
2-Chlorotoluene	19.8	0.500	1.00	"	"	"	---	99	"	---	---	
4-Chlorotoluene	18.5	0.500	1.00	"	"	"	---	93	"	---	---	
Dibromochloromethane	22.0	0.500	1.00	"	"	"	---	110	"	---	---	
1,2-Dibromo-3-chloropropane	19.5	2.50	5.00	"	"	"	---	98	"	---	---	
1,2-Dibromoethane (EDB)	19.8	0.250	0.500	"	"	"	---	99	"	---	---	
Dibromomethane	20.9	0.500	1.00	"	"	"	---	104	"	---	---	
1,2-Dichlorobenzene	19.6	0.250	0.500	"	"	"	---	98	"	---	---	
1,3-Dichlorobenzene	19.9	0.250	0.500	"	"	"	---	99	"	---	---	
1,4-Dichlorobenzene	19.8	0.250	0.500	"	"	"	---	99	"	---	---	

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Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7111035 - EPA 5030B									Water			
LCS (7111035-BS1)					Prepared: 11/27/17 09:26 Analyzed: 11/27/17 09:54							
EPA 8260C												
Dichlorodifluoromethane	16.7	0.500	1.00	ug/L	"	"	---	84	"	---	---	
1,1-Dichloroethane	20.7	0.200	0.400	"	"	"	---	103	"	---	---	
1,2-Dichloroethane (EDC)	20.1	0.200	0.400	"	"	"	---	101	"	---	---	
1,1-Dichloroethene	19.7	0.200	0.400	"	"	"	---	98	"	---	---	
cis-1,2-Dichloroethene	19.3	0.200	0.400	"	"	"	---	97	"	---	---	
trans-1,2-Dichloroethene	20.1	0.200	0.400	"	"	"	---	100	"	---	---	
1,2-Dichloropropane	20.6	0.250	0.500	"	"	"	---	103	"	---	---	
1,3-Dichloropropane	19.4	0.500	1.00	"	"	"	---	97	"	---	---	
2,2-Dichloropropane	17.4	0.500	1.00	"	"	"	---	87	"	---	---	
1,1-Dichloropropene	19.0	0.500	1.00	"	"	"	---	95	"	---	---	
cis-1,3-Dichloropropene	16.8	0.500	1.00	"	"	"	---	84	"	---	---	
trans-1,3-Dichloropropene	19.3	0.500	1.00	"	"	"	---	97	"	---	---	
Hexachlorobutadiene	17.3	2.50	5.00	"	"	"	---	87	"	---	---	
Methylene chloride	21.5	1.50	3.00	"	"	"	---	108	"	---	---	
1,1,1,2-Tetrachloroethane	21.3	0.200	0.400	"	"	"	---	107	"	---	---	
1,1,2,2-Tetrachloroethane	21.5	0.250	0.500	"	"	"	---	107	"	---	---	
Tetrachloroethene (PCE)	19.5	0.200	0.400	"	"	"	---	97	"	---	---	
1,2,3-Trichlorobenzene	19.3	1.00	2.00	"	"	"	---	97	"	---	---	
1,2,4-Trichlorobenzene	18.1	1.00	2.00	"	"	"	---	91	"	---	---	
1,1,1-Trichloroethane	20.3	0.200	0.400	"	"	"	---	102	"	---	---	
1,1,2-Trichloroethane	19.8	0.250	0.500	"	"	"	---	99	"	---	---	
Trichloroethene (TCE)	20.6	0.200	0.400	"	"	"	---	103	"	---	---	
Trichlorofluoromethane	23.2	1.00	2.00	"	"	"	---	116	"	---	---	
1,2,3-Trichloropropane	20.2	0.500	1.00	"	"	"	---	101	"	---	---	
Vinyl chloride	21.9	0.200	0.400	"	"	"	---	109	"	---	---	

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 104 %*	*Limits: 80-120 %*	*Dilution: 1x*
Toluene-d8 (Surr)	*96 %*	*80-120 %*	*"*
4-Bromofluorobenzene (Surr)	*91 %*	*80-120 %*	*"*

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Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260C

Prep: EPA 5030B

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 7111035							
A7K0815-01RE1	Water	EPA 8260C	11/16/17 17:45	11/27/17 10:41	5mL/5mL	5mL/5mL	1.00
A7K0815-02RE1	Water	EPA 8260C	11/16/17 16:10	11/27/17 10:41	5mL/5mL	5mL/5mL	1.00
A7K0815-03RE1	Water	EPA 8260C	11/16/17 15:00	11/27/17 10:41	5mL/5mL	5mL/5mL	1.00
A7K0815-04RE1	Water	EPA 8260C	11/16/17 16:50	11/27/17 10:41	5mL/5mL	5mL/5mL	1.00

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

Notes and Definitions

Qualifiers:

Q-54	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +2%. The results are reported as Estimated Values.
Q-54b	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +9%. The results are reported as Estimated Values.
Q-54c	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -1%. The results are reported as Estimated Values.
Q-55	Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260C, however there is adequate sensitivity to ensure detection at the reporting level.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260C

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
***	Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Apex Laboratories

Philip Nerenberg, Lab Director

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Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
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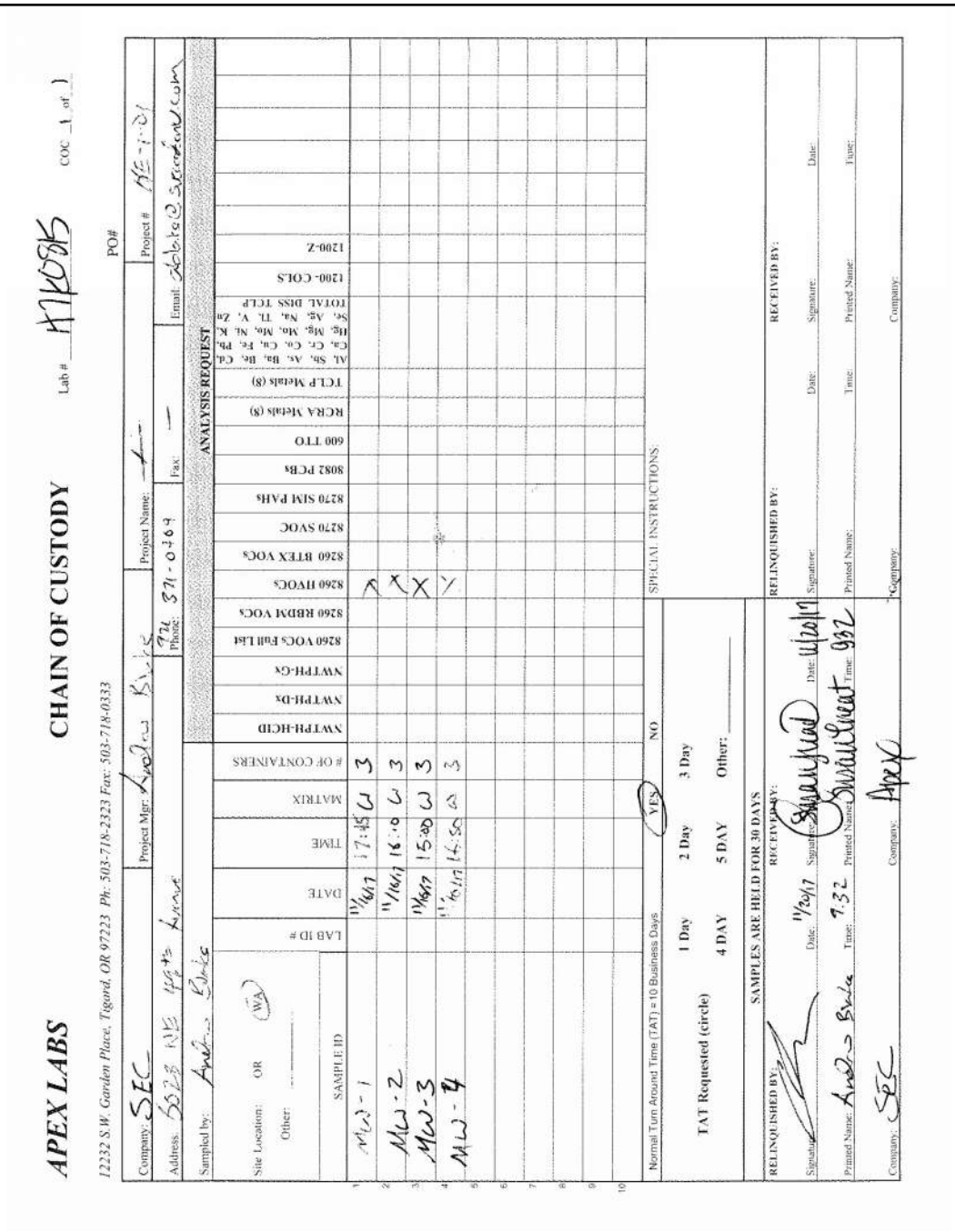
Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31



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Philip Nerenberg

Philip Nerenberg, Lab Director

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6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	11/28/17 14:31

APEX LABS COOLER RECEIPT FORM

Client: SEC Element WO#: A7 K0815

Project/Project #: K HE-1-01

Delivery info:

Date/Time Received: 11/20/17 @ 932 By: [illegible]

Delivered by: Apex___ Client ✓ ESS___ FedEx___ UPS___ Swift___ Senvoy___ SDS___ Other_____

Cooler Inspection Inspected by: [illegible] : 11/20/17 @ 932

Chain of Custody Included? Yes ✓ No ___ Custody Seals? Yes_____ No ✓

Signed/Dated by Client? Yes ✓ No ___

Signed/Dated by Apex? Yes ✓ No ___

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)	—						
Received on Ice? (Y/N)							
Temp. Blanks? (Y/N)	39						
Ice Type: (Gel/Real/Other)							
Condition:	good						

Cooler out of temp? (Y/N) Possible reason why:

If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA

Samples Inspection: Inspected by: KM : 11/22/17 @ 1105

All Samples Intact? Yes X No ___ Comments:

Bottle Labels/COCs agree? Yes ___ No X Comments: T on MW-3 reads 1455

Containers/Volumes Received Appropriate for Analysis? Yes X No ___ Comments:

KM

Do VOA Vials have Visible Headspace? Yes ___ No X NA X

Comments

Water Samples: pH Checked and Appropriate (except VOAs): Yes___No___NA X

Comments:

Additional Information:

Labeled by: KM Witness: B Cooler Inspected by: — See Project Contact Form: Y

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Philip Nerenberg

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Saturday, February 10, 2018

Andrew S. Blake, R.G., L.G.
Succeed Environmental Consulting
6028 NE 49th Ave.
Portland, OR 97218

RE: HE-1-01 / [none]

Enclosed are the results of analyses for work order A8B0073, which was received by the laboratory on 2/2/2018 at 2:00:00PM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	02/10/18 11:06

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	A8B0073-01	Water	02/01/18 10:55	02/02/18 14:00
MW-1-DUP	A8B0073-02	Water	02/01/18 10:55	02/02/18 14:00
MW-2	A8B0073-03	Water	02/01/18 13:50	02/02/18 14:00
MW-3	A8B0073-04	Water	02/01/18 16:15	02/02/18 14:00
MW-4	A8B0073-05	Water	02/01/18 12:25	02/02/18 14:00
Trip Blank	A8B0073-06	Water	02/01/18 00:00	02/02/18 14:00

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6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	02/10/18 11:06

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
MW-1 (A8B0073-01)			**Matrix: Water**		**Batch: 8020371**			
Chloroform	**1.33**	0.500	1.00	ug/L	1	02/05/18 14:03	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 104 %*	*Limits: 80-120 %*	"	"	"	
Toluene-d8 (Surr)			*101 %*	*Limits: 80-120 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*103 %*	*Limits: 80-120 %*	"	"	"	
MW-1-DUP (A8B0073-02)			**Matrix: Water**		**Batch: 8020371**			
Chloroform	**1.32**	0.500	1.00	ug/L	1	02/05/18 15:00	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 104 %*	*Limits: 80-120 %*	"	"	"	
Toluene-d8 (Surr)			*100 %*	*Limits: 80-120 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*103 %*	*Limits: 80-120 %*	"	"	"	
MW-2 (A8B0073-03)			**Matrix: Water**		**Batch: 8020371**			
Chloroform	ND	0.500	1.00	ug/L	1	02/05/18 15:28	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
Tetrachloroethene (PCE)	**0.859**	0.200	0.400	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 104 %*	*Limits: 80-120 %*	"	"	"	
Toluene-d8 (Surr)			*101 %*	*Limits: 80-120 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*105 %*	*Limits: 80-120 %*	"	"	"	
MW-3 (A8B0073-04)			**Matrix: Water**		**Batch: 8020371**			
Chloroform	ND	0.500	1.00	ug/L	1	02/05/18 15:56	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
Tetrachloroethene (PCE)	**1.35**	0.200	0.400	"	"	"	"	

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Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	02/10/18 11:06

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
MW-3 (A8B0073-04)			**Matrix: Water**		**Batch: 8020371**			
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	"	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*	*Limits: 80-120 %*	"	"	"	
Toluene-d8 (Surr)			*101 %*	*Limits: 80-120 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*105 %*	*Limits: 80-120 %*	"	"	"	
MW-4 (A8B0073-05)			**Matrix: Water**		**Batch: 8020371**			
Chloroform	ND	0.500	1.00	ug/L	1	02/05/18 16:24	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
Tetrachloroethene (PCE)	**1.56**	0.200	0.400	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 104 %*	*Limits: 80-120 %*	"	"	"	
Toluene-d8 (Surr)			*100 %*	*Limits: 80-120 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*104 %*	*Limits: 80-120 %*	"	"	"	
Trip Blank (A8B0073-06)			**Matrix: Water**		**Batch: 8020371**			
Chloroform	ND	0.500	1.00	ug/L	1	02/05/18 12:38	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 102 %*	*Limits: 80-120 %*	"	"	"	
Toluene-d8 (Surr)			*100 %*	*Limits: 80-120 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*103 %*	*Limits: 80-120 %*	"	"	"	

Apex Laboratories

Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	02/10/18 11:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8020371 - EPA 5030B									Water			
Blank (8020371-BLK1)					Prepared: 02/05/18 09:49 Analyzed: 02/05/18 11:13							
EPA 8260C												
Chloroform	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*			*"*				
LCS (8020371-BS1)					Prepared: 02/05/18 09:49 Analyzed: 02/05/18 10:17							
EPA 8260C												
Chloroform	19.9	0.500	1.00	ug/L	1	20.0	---	99	80-120%	---	---	
cis-1,2-Dichloroethene	21.4	0.200	0.400	"	"	"	---	107	"	---	---	
trans-1,2-Dichloroethene	21.3	0.200	0.400	"	"	"	---	106	"	---	---	
Tetrachloroethene (PCE)	20.7	0.200	0.400	"	"	"	---	103	"	---	---	
Trichloroethene (TCE)	20.0	0.200	0.400	"	"	"	---	100	"	---	---	
Vinyl chloride	17.3	0.200	0.400	"	"	"	---	86	"	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 97 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*			*"*				
Duplicate (8020371-DUP1)					Prepared: 02/05/18 11:15 Analyzed: 02/05/18 14:31							
QC Source Sample: MW-1 (A8B0073-01)												
EPA 8260C												
Chloroform	**1.26**	0.500	1.00	ug/L	1	---	1.33	---	---	5	30%	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 102 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*101 %*		*80-120 %*			*"*				

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Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	02/10/18 11:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8020371 - EPA 5030B									**Water**			
Matrix Spike (8020371-MS1)					Prepared: 02/05/18 11:15 Analyzed: 02/05/18 16:53							
QC Source Sample: MW-4 (A8B0073-05)												
EPA 8260C												
Chloroform	20.9	0.500	1.00	ug/L	1	20.0	ND	105	79-124%	---	---	
cis-1,2-Dichloroethene	22.1	0.200	0.400	"	"	"	ND	111	78-123%	---	---	
trans-1,2-Dichloroethene	22.5	0.200	0.400	"	"	"	ND	112	75-124%	---	---	
Tetrachloroethene (PCE)	23.0	0.200	0.400	"	"	"	1.56	107	74-129%	---	---	
Trichloroethene (TCE)	20.9	0.200	0.400	"	"	"	ND	105	79-123%	---	---	
Vinyl chloride	19.6	0.200	0.400	"	"	"	ND	98	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 97 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*96 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*			*"*				

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6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	02/10/18 11:06

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260C

Prep: EPA 5030B

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 8020371							
A8B0073-01	Water	EPA 8260C	02/01/18 10:55	02/05/18 11:15	5mL/5mL	5mL/5mL	1.00
A8B0073-02	Water	EPA 8260C	02/01/18 10:55	02/05/18 11:15	5mL/5mL	5mL/5mL	1.00
A8B0073-03	Water	EPA 8260C	02/01/18 13:50	02/05/18 11:15	5mL/5mL	5mL/5mL	1.00
A8B0073-04	Water	EPA 8260C	02/01/18 16:15	02/05/18 11:15	5mL/5mL	5mL/5mL	1.00
A8B0073-05	Water	EPA 8260C	02/01/18 12:25	02/05/18 11:15	5mL/5mL	5mL/5mL	1.00
A8B0073-06	Water	EPA 8260C	02/01/18 00:00	02/05/18 11:15	5mL/5mL	5mL/5mL	1.00

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6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	02/10/18 11:06

Notes and Definitions

Qualifiers:

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
***	Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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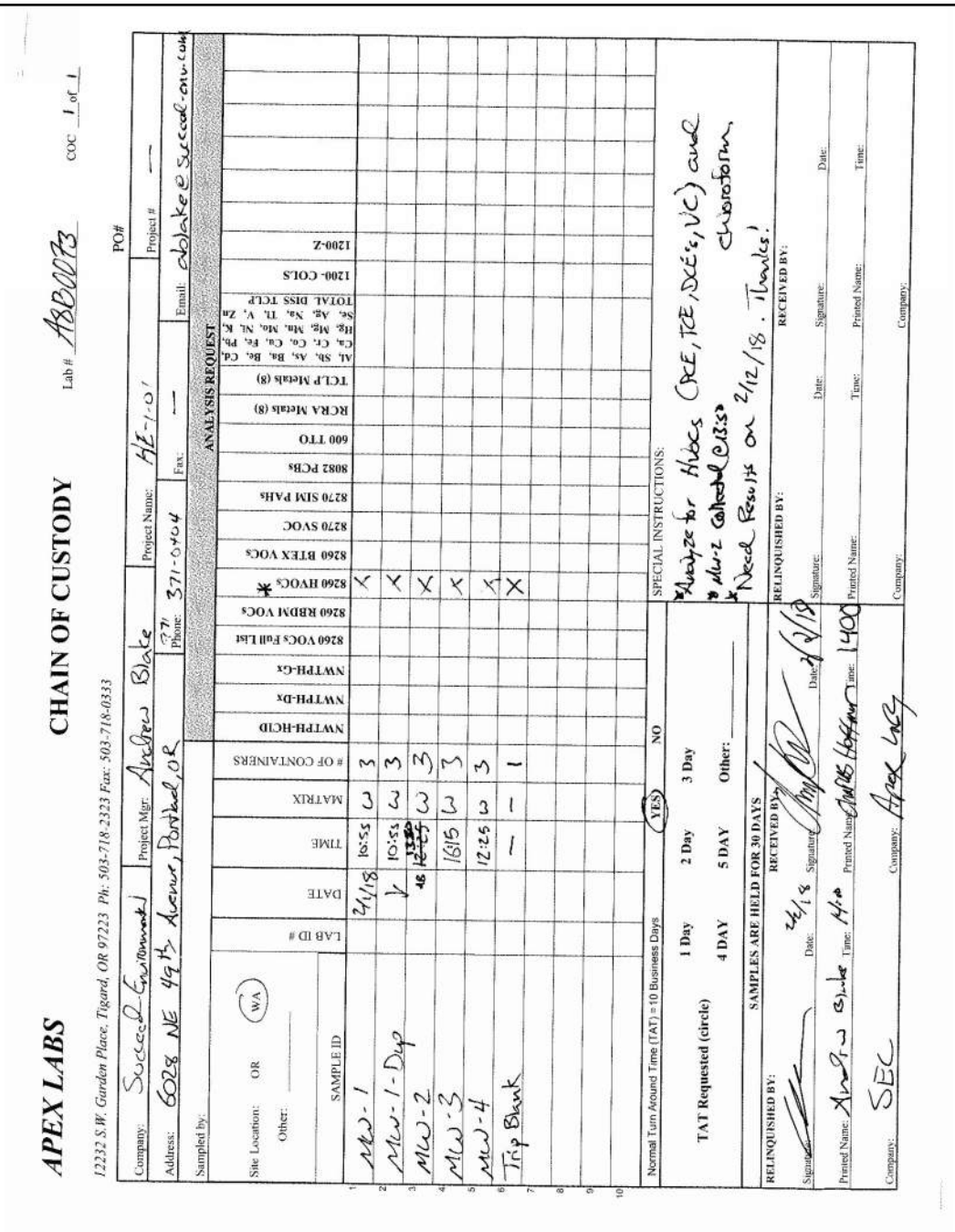
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	02/10/18 11:06



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12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: [none]	**Reported:**
Portland, OR 97218	Project Manager: Andrew S. Blake, R.G., L.G.	02/10/18 11:06

APEX LABS COOLER RECEIPT FORM

Client: Succeed Environmental Element WO#: A8 B0073

Project/Project #: HE-1-01

Delivery info:

Date/Time Received: 2/2/18 @ 1400 By: CFH

Delivered by: Apex X Client ___ ESS ___ FedEx ___ UPS ___ Swift ___ Senvoy ___ SDS ___ Other ___

Cooler Inspection Inspected by: CFH : 2/2/18 @ 1438

Chain of Custody Included? Yes X No ___ Custody Seals? Yes ___ No —

Signed/Dated by Client? Yes X No ___

Signed/Dated by Apex? Yes X No ___

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)							
Received on Ice? (Y/N)							
Temp. Blanks? (Y/N)	5.1						
Ice Type: (Gel/Real/Other)							
Condition:	Good						

Cooler out of temp? (Y/N) Possible reason why: ___

If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA

Samples Inspection: Inspected by: (8) : 2/2/18 @ 1610

All Samples Intact? Yes ✓ No ___ Comments: ___

Bottle Labels/COCs agree? Yes ✓ No ___ Comments: No D/T on trip blank), trip blanks #1712

Containers/Volumes Received Appropriate for Analysis? Yes ✓ No ___ Comments:

Do VOA Vials have Visible Headspace? Yes ___ No ✓ NA ___

Comments ___

Water Samples: pH Checked and Appropriate (except VOAs): Yes ___ No ___ NA ✓

Comments: ___

Additional Information: ___

Labeled by: Witness: (8) Cooler Inspected by: See Project Contact Form: Y

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Philip Nerenberg

Philip Nerenberg, Lab Director

Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Wednesday, May 23, 2018

Andrew S. Blake, R.G., L.G.
Succeed Environmental Consulting
6028 NE 49th Ave.
Portland, OR 97218

RE: A8E0551 - HE-1-01 - HE-1-01

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A8E0551, which was received by the laboratory on 5/17/2018 at 12:38:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1-01**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8E0551 - 05 23 18 1636**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-4	A8E0551-01	Water	05/16/18 11:00	05/17/18 12:38
MW-4 DUP	A8E0551-02	Water	05/16/18 11:00	05/17/18 12:38
MW-3D	A8E0551-03	Water	05/16/18 12:20	05/17/18 12:38
MW-3	A8E0551-04	Water	05/16/18 13:00	05/17/18 12:38
MW-2	A8E0551-05	Water	05/16/18 14:00	05/17/18 12:38
MW-1	A8E0551-06	Water	05/16/18 15:30	05/17/18 12:38
Trip Blank	A8E0551-07	Water	05/16/18 00:00	05/17/18 12:38

Apex Laboratories

Philip Nerenberg, Lab Director

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EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1-01**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8E0551 - 05 23 18 1636**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-4 (A8E0551-01)			**Matrix: Water**			**Batch: 8050875**		
Chloroform	ND	0.500	1.00	ug/L	1	05/18/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Tetrachloroethene (PCE)	**1.10**	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 110 %*	*Limits: 80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
4-Bromofluorobenzene (Surr)			*93 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
MW-4 DUP (A8E0551-02)			**Matrix: Water**			**Batch: 8050898**		
Chloroform	ND	0.500	1.00	ug/L	1	05/18/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Tetrachloroethene (PCE)	**1.01**	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 102 %*	*Limits: 80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
4-Bromofluorobenzene (Surr)			*99 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
MW-3D (A8E0551-03)			**Matrix: Water**			**Batch: 8050898**		
Chloroform	ND	0.500	1.00	ug/L	1	05/18/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*	*Limits: 80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
4-Bromofluorobenzene (Surr)			*99 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
MW-3 (A8E0551-04)			**Matrix: Water**			**Batch: 8050875**		
Chloroform	ND	0.500	1.00	ug/L	1	05/18/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Tetrachloroethene (PCE)	**0.450**	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	

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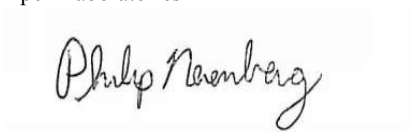

Philip Nerenberg, Lab Director

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Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1-01**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8E0551 - 05 23 18 1636**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-3 (A8E0551-04)			**Matrix: Water**			**Batch: 8050875**		
Vinyl chloride	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 111 %*	*Limits: 80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
4-Bromofluorobenzene (Surr)			*94 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
MW-2 (A8E0551-05)			**Matrix: Water**			**Batch: 8050898**		
Chloroform	ND	0.500	1.00	ug/L	1	05/18/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Tetrachloroethene (PCE)	**0.741**	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 106 %*	*Limits: 80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
4-Bromofluorobenzene (Surr)			*99 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
MW-1 (A8E0551-06)			**Matrix: Water**			**Batch: 8050898**		
Chloroform	**0.605**	0.500	1.00	ug/L	1	05/18/18	EPA 8260C	**J**
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 105 %*	*Limits: 80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
4-Bromofluorobenzene (Surr)			*98 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
Trip Blank (A8E0551-07)			**Matrix: Water**			**Batch: 8050875**		
Chloroform	ND	0.500	1.00	ug/L	1	05/18/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	ug/L	1	05/18/18	EPA 8260C	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 108 %*	*Limits: 80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	
4-Bromofluorobenzene (Surr)			*96 %*	*80-120 %*	*1*	*05/18/18*	*EPA 8260C*	

Apex Laboratories

Philip Nerenberg, Lab Director

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Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1-01**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8E0551 - 05 23 18 1636**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050875 - EPA 5030B							**Water**					
Blank (8050875-BLK1)			Prepared: 05/18/18 08:36 Analyzed: 05/18/18 10:58									
EPA 8260C												
Chloroform	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 109 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				
LCS (8050875-BS1)			Prepared: 05/18/18 08:36 Analyzed: 05/18/18 09:59									
EPA 8260C												
Chloroform	21.6	0.500	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
1,1-Dichloroethene	20.1	0.200	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
cis-1,2-Dichloroethene	20.4	0.200	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
trans-1,2-Dichloroethene	20.4	0.200	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
Tetrachloroethene (PCE)	17.9	0.200	0.400	ug/L	1	20.0	---	89	80-120%	---	---	
Trichloroethene (TCE)	20.0	0.200	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
Vinyl chloride	22.0	0.200	0.400	ug/L	1	20.0	---	110	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 108 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Duplicate (8050875-DUP1)			Prepared: 05/18/18 10:34 Analyzed: 05/18/18 20:26									
QC Source Sample: Non-SDG (A8E0557-01)												
Chloroform	ND	5.00	10.0	ug/L	10	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Vinyl chloride	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	

Apex Laboratories

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Philip Nerenberg, Lab Director

Apex Laboratories, LLC

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EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1-01**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8E0551 - 05 23 18 1636**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050875 - EPA 5030B							**Water**					
Duplicate (8050875-DUP1)			Prepared: 05/18/18 10:34 Analyzed: 05/18/18 20:26									
QC Source Sample: Non-SDG (A8E0557-01)												
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 114 %*	*Limits: 80-120 %*			*Dilution: 1x*					
Toluene-d8 (Surr)			*97 %*	*80-120 %*			*"*					
4-Bromofluorobenzene (Surr)			*92 %*	*80-120 %*			*"*					
Matrix Spike (8050875-MS1)			Prepared: 05/18/18 10:34 Analyzed: 05/18/18 15:28									
QC Source Sample: Non-SDG (A8E0569-07)												
EPA 8260C												
Chloroform	23.7	0.500	1.00	ug/L	1	20.0	ND	119	79-124%	---	---	
1,1-Dichloroethene	23.0	0.200	0.400	ug/L	1	20.0	0.915	111	71-131%	---	---	
cis-1,2-Dichloroethene	60.1	0.200	0.400	ug/L	1	20.0	37.9	111	78-123%	---	---	
trans-1,2-Dichloroethene	22.2	0.200	0.400	ug/L	1	20.0	0.216	110	75-124%	---	---	
Tetrachloroethene (PCE)	22.7	0.200	0.400	ug/L	1	20.0	3.01	98	74-129%	---	---	
Trichloroethene (TCE)	29.3	0.200	0.400	ug/L	1	20.0	7.60	108	79-123%	---	---	
Vinyl chloride	24.1	0.200	0.400	ug/L	1	20.0	ND	120	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 109 %*	*Limits: 80-120 %*			*Dilution: 1x*					
Toluene-d8 (Surr)			*96 %*	*80-120 %*			*"*					
4-Bromofluorobenzene (Surr)			*95 %*	*80-120 %*			*"*					

Apex Laboratories

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Philip Nerenberg, Lab Director

Apex Laboratories, LLC

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EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1-01**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8E0551 - 05 23 18 1636**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050898 - EPA 5030B							**Water**					
Blank (8050898-BLK1)			Prepared: 05/18/18 12:46 Analyzed: 05/18/18 14:58									
EPA 8260C												
Bromobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Bromoform	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Bromomethane	ND	5.00	5.00	ug/L	1	---	---	---	---	---	---	
Carbon tetrachloride	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Chlorobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Chloroethane	ND	10.0	10.0	ug/L	1	---	---	---	---	---	---	
Chloroform	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Chloromethane	ND	2.50	5.00	ug/L	1	---	---	---	---	---	---	
2-Chlorotoluene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
4-Chlorotoluene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Dibromochloromethane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	ug/L	1	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Dibromomethane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,1-Dichloroethane	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,2-Dichloropropane	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
1,3-Dichloropropane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
2,2-Dichloropropane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,1-Dichloropropene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Hexachlorobutadiene	ND	2.50	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	1.50	3.00	ug/L	1	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director

Apex Laboratories, LLC

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503-718-2323
EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1-01**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8E0551 - 05 23 18 1636**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050898 - EPA 5030B							**Water**					
Blank (8050898-BLK1)			Prepared: 05/18/18 12:46 Analyzed: 05/18/18 14:58									
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Trichlorofluoromethane	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 107 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*			*"*				
LCS (8050898-BS1)			Prepared: 05/18/18 12:46 Analyzed: 05/18/18 14:02									
EPA 8260C												
Bromobenzene	20.0	0.250	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
Bromochloromethane	19.7	0.500	1.00	ug/L	1	20.0	---	98	80-120%	---	---	
Bromodichloromethane	19.9	0.500	1.00	ug/L	1	20.0	---	99	80-120%	---	---	
Bromoform	18.8	0.500	1.00	ug/L	1	20.0	---	94	80-120%	---	---	
Bromomethane	17.7	5.00	5.00	ug/L	1	20.0	---	88	80-120%	---	---	
Carbon tetrachloride	19.1	0.500	1.00	ug/L	1	20.0	---	95	80-120%	---	---	
Chlorobenzene	19.4	0.250	0.500	ug/L	1	20.0	---	97	80-120%	---	---	
Chloroethane	19.0	10.0	10.0	ug/L	1	20.0	---	95	80-120%	---	---	
Chloroform	19.1	0.500	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
Chloromethane	17.0	2.50	5.00	ug/L	1	20.0	---	85	80-120%	---	---	
2-Chlorotoluene	20.9	0.500	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
4-Chlorotoluene	21.0	0.500	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Dibromochloromethane	21.8	0.500	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,2-Dibromo-3-chloropropane	19.3	2.50	5.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,2-Dibromoethane (EDB)	20.5	0.250	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
Dibromomethane	19.7	0.500	1.00	ug/L	1	20.0	---	99	80-120%	---	---	
1,2-Dichlorobenzene	20.1	0.250	0.500	ug/L	1	20.0	---	101	80-120%	---	---	
1,3-Dichlorobenzene	20.9	0.250	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
1,4-Dichlorobenzene	19.0	0.250	0.500	ug/L	1	20.0	---	95	80-120%	---	---	

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Philip Nerenberg, Lab Director

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6028 NE 49th Ave.	Project Number: **HE-1-01**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8E0551 - 05 23 18 1636**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050898 - EPA 5030B							**Water**					
LCS (8050898-BS1)			Prepared: 05/18/18 12:46 Analyzed: 05/18/18 14:02									
Dichlorodifluoromethane	17.6	0.500	1.00	ug/L	1	20.0	---	88	80-120%	---	---	
1,1-Dichloroethane	18.7	0.200	0.400	ug/L	1	20.0	---	94	80-120%	---	---	
1,2-Dichloroethane (EDC)	18.9	0.200	0.400	ug/L	1	20.0	---	94	80-120%	---	---	
1,1-Dichloroethene	16.9	0.200	0.400	ug/L	1	20.0	---	84	80-120%	---	---	
cis-1,2-Dichloroethene	19.2	0.200	0.400	ug/L	1	20.0	---	96	80-120%	---	---	
trans-1,2-Dichloroethene	18.5	0.200	0.400	ug/L	1	20.0	---	93	80-120%	---	---	
1,2-Dichloropropane	18.8	0.250	0.500	ug/L	1	20.0	---	94	80-120%	---	---	
1,3-Dichloropropane	20.1	0.500	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
2,2-Dichloropropane	20.2	0.500	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
1,1-Dichloropropene	20.1	0.500	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
cis-1,3-Dichloropropene	18.2	0.500	1.00	ug/L	1	20.0	---	91	80-120%	---	---	
trans-1,3-Dichloropropene	18.6	0.500	1.00	ug/L	1	20.0	---	93	80-120%	---	---	
Hexachlorobutadiene	20.7	2.50	5.00	ug/L	1	20.0	---	103	80-120%	---	---	
Methylene chloride	18.4	1.50	3.00	ug/L	1	20.0	---	92	80-120%	---	---	
1,1,1,2-Tetrachloroethane	21.3	0.200	0.400	ug/L	1	20.0	---	107	80-120%	---	---	
1,1,2,2-Tetrachloroethane	20.5	0.250	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
Tetrachloroethene (PCE)	19.4	0.200	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
1,2,3-Trichlorobenzene	21.8	1.00	2.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,2,4-Trichlorobenzene	19.6	1.00	2.00	ug/L	1	20.0	---	98	80-120%	---	---	
1,1,1-Trichloroethane	19.4	0.200	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
1,1,2-Trichloroethane	19.9	0.250	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
Trichloroethene (TCE)	18.5	0.200	0.400	ug/L	1	20.0	---	92	80-120%	---	---	
Trichlorofluoromethane	19.1	1.00	2.00	ug/L	1	20.0	---	95	80-120%	---	---	
1,2,3-Trichloropropane	20.8	0.500	1.00	ug/L	1	20.0	---	104	80-120%	---	---	
Vinyl chloride	17.5	0.200	0.400	ug/L	1	20.0	---	88	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 96 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*			*"*				
Duplicate (8050898-DUP1)			Prepared: 05/18/18 12:46 Analyzed: 05/18/18 21:20									**V-20**
QC Source Sample: Non-SDG (A8E0579-04)												
Bromobenzene	ND	12500	25000	ug/L	50000	---	ND	---	---	---	30%	
Bromochloromethane	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
Bromodichloromethane	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	

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6028 NE 49th Ave.	Project Number: **HE-1-01**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8E0551 - 05 23 18 1636**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050898 - EPA 5030B							**Water**					
Duplicate (8050898-DUP1)			Prepared: 05/18/18 12:46		Analyzed: 05/18/18 21:20							**V-20**
QC Source Sample: Non-SDG (A8E0579-04)												
Bromoform	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
Bromomethane	ND	250000	250000	ug/L	50000	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
Chlorobenzene	ND	12500	25000	ug/L	50000	---	ND	---	---	---	30%	
Chloroethane	ND	500000	500000	ug/L	50000	---	ND	---	---	---	30%	
Chloroform	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
Chloromethane	ND	125000	250000	ug/L	50000	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
Dibromochloromethane	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	125000	250000	ug/L	50000	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	12500	25000	ug/L	50000	---	ND	---	---	---	30%	
Dibromomethane	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	12500	25000	ug/L	50000	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	12500	25000	ug/L	50000	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	12500	25000	ug/L	50000	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	10000	20000	ug/L	50000	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	10000	20000	ug/L	50000	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	10000	20000	ug/L	50000	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	10000	20000	ug/L	50000	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	10000	20000	ug/L	50000	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	12500	25000	ug/L	50000	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	125000	250000	ug/L	50000	---	ND	---	---	---	30%	
Methylene chloride	ND	75000	150000	ug/L	50000	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	10000	20000	ug/L	50000	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	12500	25000	ug/L	50000	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	10000	20000	ug/L	50000	---	ND	---	---	---	30%	

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Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8E0551 - 05 23 18 1636**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050898 - EPA 5030B							**Water**					
Duplicate (8050898-DUP1)			Prepared: 05/18/18 12:46 Analyzed: 05/18/18 21:20									**V-20**
QC Source Sample: Non-SDG (A8E0579-04)												
1,2,3-Trichlorobenzene	ND	50000	100000	ug/L	50000	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	50000	100000	ug/L	50000	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	10000	20000	ug/L	50000	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	12500	25000	ug/L	50000	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	10000	20000	ug/L	50000	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	50000	100000	ug/L	50000	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	25000	50000	ug/L	50000	---	ND	---	---	---	30%	
Vinyl chloride	ND	10000	20000	ug/L	50000	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 105 %*		*Limits: 80-120 %*					*Dilution: 1x*		
Toluene-d8 (Surr)			*98 %*		*80-120 %*					*"*		
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*					*"*		
Matrix Spike (8050898-MS1)			Prepared: 05/18/18 12:46 Analyzed: 05/18/18 19:59									
QC Source Sample: Non-SDG (A8E0557-05)												
EPA 8260C												
Bromobenzene	995	12.5	25.0	ug/L	50	1000	ND	100	80-120%	---	---	
Bromochloromethane	931	25.0	50.0	ug/L	50	1000	ND	93	78-123%	---	---	
Bromodichloromethane	918	25.0	50.0	ug/L	50	1000	ND	92	79-125%	---	---	
Bromoform	876	25.0	50.0	ug/L	50	1000	ND	88	66-130%	---	---	
Bromomethane	873	250	250	ug/L	50	1000	ND	87	53-141%	---	---	
Carbon tetrachloride	936	25.0	50.0	ug/L	50	1000	ND	94	72-136%	---	---	
Chlorobenzene	958	12.5	25.0	ug/L	50	1000	ND	96	80-120%	---	---	
Chloroethane	868	500	500	ug/L	50	1000	ND	87	60-138%	---	---	
Chloroform	920	25.0	50.0	ug/L	50	1000	ND	92	79-124%	---	---	
Chloromethane	838	125	250	ug/L	50	1000	ND	84	50-139%	---	---	
2-Chlorotoluene	1070	25.0	50.0	ug/L	50	1000	ND	107	79-122%	---	---	
4-Chlorotoluene	1050	25.0	50.0	ug/L	50	1000	ND	105	78-122%	---	---	
Dibromochloromethane	1040	25.0	50.0	ug/L	50	1000	ND	104	74-126%	---	---	
1,2-Dibromo-3-chloropropane	928	125	250	ug/L	50	1000	ND	93	62-128%	---	---	
1,2-Dibromoethane (EDB)	1010	12.5	25.0	ug/L	50	1000	ND	101	77-121%	---	---	
Dibromomethane	918	25.0	50.0	ug/L	50	1000	ND	92	79-123%	---	---	
1,2-Dichlorobenzene	1020	12.5	25.0	ug/L	50	1000	ND	102	80-120%	---	---	
1,3-Dichlorobenzene	1040	12.5	25.0	ug/L	50	1000	ND	104	80-120%	---	---	

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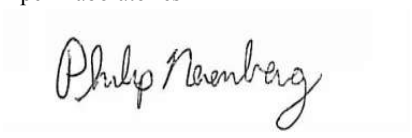

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Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050898 - EPA 5030B							**Water**					
Matrix Spike (8050898-MS1)			Prepared: 05/18/18 12:46 Analyzed: 05/18/18 19:59									
QC Source Sample: Non-SDG (A8E0557-05)												
1,4-Dichlorobenzene	942	12.5	25.0	ug/L	50	1000	ND	94	79-120%	---	---	
Dichlorodifluoromethane	898	25.0	50.0	ug/L	50	1000	ND	90	32-152%	---	---	
1,1-Dichloroethane	915	10.0	20.0	ug/L	50	1000	ND	92	77-125%	---	---	
1,2-Dichloroethane (EDC)	886	10.0	20.0	ug/L	50	1000	ND	89	73-128%	---	---	
1,1-Dichloroethene	847	10.0	20.0	ug/L	50	1000	ND	85	71-131%	---	---	
cis-1,2-Dichloroethene	935	10.0	20.0	ug/L	50	1000	ND	93	78-123%	---	---	
trans-1,2-Dichloroethene	915	10.0	20.0	ug/L	50	1000	ND	91	75-124%	---	---	
1,2-Dichloropropane	904	12.5	25.0	ug/L	50	1000	ND	90	78-122%	---	---	
1,3-Dichloropropane	985	25.0	50.0	ug/L	50	1000	ND	98	80-120%	---	---	
2,2-Dichloropropane	875	25.0	50.0	ug/L	50	1000	ND	88	60-139%	---	---	
1,1-Dichloropropene	1020	25.0	50.0	ug/L	50	1000	ND	102	79-125%	---	---	
cis-1,3-Dichloropropene	795	25.0	50.0	ug/L	50	1000	ND	79	75-124%	---	---	
trans-1,3-Dichloropropene	888	25.0	50.0	ug/L	50	1000	ND	89	73-127%	---	---	
Hexachlorobutadiene	1070	125	250	ug/L	50	1000	ND	107	66-134%	---	---	
Methylene chloride	870	75.0	150	ug/L	50	1000	ND	87	74-124%	---	---	
1,1,1,2-Tetrachloroethane	1030	10.0	20.0	ug/L	50	1000	ND	103	78-124%	---	---	
1,1,2,2-Tetrachloroethane	1010	12.5	25.0	ug/L	50	1000	ND	101	71-121%	---	---	
Tetrachloroethene (PCE)	998	10.0	20.0	ug/L	50	1000	ND	100	74-129%	---	---	
1,2,3-Trichlorobenzene	1150	50.0	100	ug/L	50	1000	ND	115	69-129%	---	---	
1,2,4-Trichlorobenzene	1120	50.0	100	ug/L	50	1000	ND	112	69-130%	---	---	
1,1,1-Trichloroethane	974	10.0	20.0	ug/L	50	1000	ND	97	74-131%	---	---	
1,1,2-Trichloroethane	980	12.5	25.0	ug/L	50	1000	ND	98	80-120%	---	---	
Trichloroethene (TCE)	893	10.0	20.0	ug/L	50	1000	ND	89	79-123%	---	---	
Trichlorofluoromethane	947	50.0	100	ug/L	50	1000	ND	95	65-141%	---	---	
1,2,3-Trichloropropane	1010	25.0	50.0	ug/L	50	1000	ND	101	73-122%	---	---	
Vinyl chloride	906	10.0	20.0	ug/L	50	1000	ND	91	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 93 %*	*Limits: 80-120 %*	*Dilution: 1x*	
Toluene-d8 (Surr)	*97 %*	*80-120 %*	*"*	
4-Bromofluorobenzene (Surr)	*101 %*	*80-120 %*	*"*	

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Philip Nerenberg, Lab Director

Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1-01**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8E0551 - 05 23 18 1636**

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260C

Prep: EPA 5030B

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 8050875							
A8E0551-01	Water	EPA 8260C	05/16/18 11:00	05/18/18 10:34	5mL/5mL	5mL/5mL	1.00
A8E0551-04	Water	EPA 8260C	05/16/18 13:00	05/18/18 10:34	5mL/5mL	5mL/5mL	1.00
A8E0551-07	Water	EPA 8260C	05/16/18 00:00	05/18/18 10:34	5mL/5mL	5mL/5mL	1.00
Batch: 8050898							
A8E0551-02	Water	EPA 8260C	05/16/18 11:00	05/18/18 14:12	5mL/5mL	5mL/5mL	1.00
A8E0551-03	Water	EPA 8260C	05/16/18 12:20	05/18/18 14:12	5mL/5mL	5mL/5mL	1.00
A8E0551-05	Water	EPA 8260C	05/16/18 14:00	05/18/18 14:12	5mL/5mL	5mL/5mL	1.00
A8E0551-06	Water	EPA 8260C	05/16/18 15:30	05/18/18 14:12	5mL/5mL	5mL/5mL	1.00

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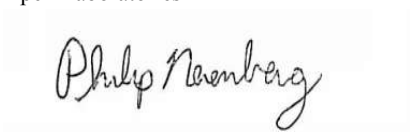
QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

J	Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
V-20	Appropriate containers for volatiles analysis were not provided by the client. VOA vials were poured off in the laboratory from 8oz Glass jar.

Apex Laboratories



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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

DET Analyte DETECTED at or above the detection or reporting limit.

ND Analyte NOT DETECTED at or above the detection or reporting limit.

NR Result Not Reported

RPD Relative Percent Difference

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.

" dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.

" wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.

" " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).
-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

Apex Laboratories

Philip Nerenberg, Lab Director

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the blank results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met. Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

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LABORATORY ACCREDITATION INFORMATION

TNI Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Cert?

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation.
Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provded by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

Philip Nerenberg, Lab Director

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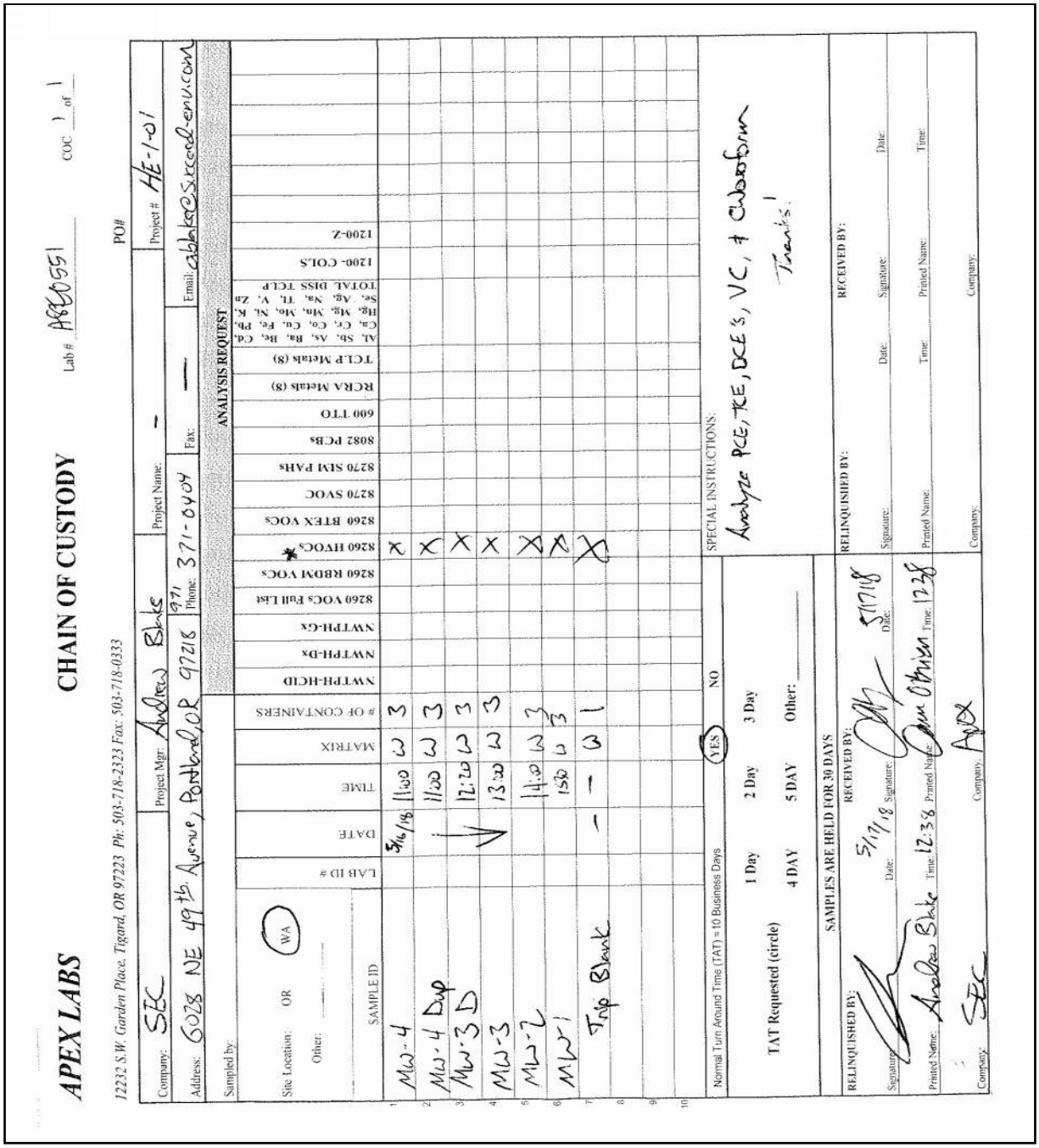

APEX LABS — CHAIN OF CUSTODY

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Lab # A8E0551 COC 1 of 1 PO#

Company: SEC | Project Mgr: Andrew Blake | Project Name: - | Project # HE-1-01

Address: 6028 NE 49th Avenue, Portland OR 97218 | Phone: 971 371-6404 | Fax: — | Email: ablake@succeed-env.com

Sampled by:

Site Location: OR WA

Other: ——

	SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOCs Full List	8260 RBDMI VOCs	8260 HVOCs ★	8260 BTEX VOCs	8270 SVOC	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS TCLP	1200- COLS	1200-Z
1	MW-4		5/16/18	11:00	W	3						X									
2	MW-4 Dup			11:00	W	3						X									
3	MW-3D			12:20	W	3						X									
4	MW-3			13:30	W	3						X									
5	MW-2			14:30	W	3						X									
6	MW-1			15:50	W	3						X									
7	Trip Blank		-	-	W	1						X									
8																					
9																					
10																					

Normal Turn Around Time (TAT) = 10 Business Days (YES) NO

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: ——

SPECIAL INSTRUCTIONS: Analyze PCE, TCE, DCE's, VC, & Chloroform Thanks!

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: Date: 5/17/18 Printed Name: Andrew Blake Time: 12:38 Company: SEC

RECEIVED BY: Signature: Date: 5/17/18 Printed Name: Sam O'Brien Time: 1238 Company: AWX

RELINQUISHED BY: Signature: Date: Printed Name: Time: Company:

RECEIVED BY: Signature: Date: Printed Name: Time: Company:

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1-01**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8E0551 - 05 23 18 1636**

APEX LABS COOLER RECEIPT FORM

Client: SEC Element WO#: A8 E0551

Project/Project #: HE-1-01

Delivery info:

Date/Time Received: 5/17/18 @ 1238 By: [illegible]

Delivered by: Apex___ Client X ESS___ FedEx___ UPS___ Swift___ Senvoy___ SDS___ Other___

Cooler Inspection Inspected by: [illegible] : 5/17/18 @ 1240

Chain of Custody Included? Yes X No ___ Custody Seals? Yes___ No X

Signed/Dated by Client? Yes X No ___

Signed/Dated by Apex? Yes X No ___

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)	2.8						
Received on Ice? (Y/N) — Y circled							
Temp. Blanks? (Y/N) — N circled							
Ice Type: (Gel/Real/Other) — Real circled							
Condition:							

Cooler out of temp? (Y/N — N circled) Possible reason why:

If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA (NA circled)

Samples Inspection: Inspected by: AKK : 5/16/18 @ 1652

All Samples Intact? Yes Y No ___ Comments:

Bottle Labels/COCs agree? Yes ___ No X Comments: MW-2 Ds read 2/16/18. Trip Blank #1784 provided ~~not on COC & no info on~~ AKK 5/17/18

Containers/Volumes Received Appropriate for Analysis? Yes X No ___ Comments: Cont.

Do VOA Vials have Visible Headspace? Yes ___ No X NA ___

Comments

Water Samples: pH Checked and Appropriate (except VOAs): Yes___ No___ NA Y

Comments:

Additional Information:

Labeled by: AKK Witness: TG Cooler Inspected by: COB See Project Contact Form: Y

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

September 14, 2018

Succeed Environmental Consulting

Sample Delivery Group:	L1025020
Samples Received:	09/12/2018
Project Number:	HE-1
Description:	

Report To: Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Entire Report Reviewed By: Brian Ford

Brian Ford
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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EB L1025020-01 GW

Collected by: Andrew Blake
Collected date/time: 09/10/18 09:00
Received date/time: 09/12/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1165634	1	09/13/18 16:01	09/13/18 16:01	RAS

MW-3 L1025020-02 GW

Collected by: Andrew Blake
Collected date/time: 09/10/18 10:30
Received date/time: 09/12/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1165634	1	09/13/18 16:21	09/13/18 16:21	RAS

MW-3(DUP) L1025020-03 GW

Collected by: Andrew Blake
Collected date/time: 09/10/18 10:30
Received date/time: 09/12/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1165634	1	09/13/18 16:41	09/13/18 16:41	RAS

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Project Manager

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloroform	U		0.0860	0.500	1	09/13/2018 16:01	WG1165634
1,1-Dichloroethene	U		0.188	0.500	1	09/13/2018 16:01	WG1165634
cis-1,2-Dichloroethene	U		0.0933	0.500	1	09/13/2018 16:01	WG1165634
trans-1,2-Dichloroethene	U		0.152	0.500	1	09/13/2018 16:01	WG1165634
Tetrachloroethene	U		0.199	0.500	1	09/13/2018 16:01	WG1165634
Trichloroethene	U		0.153	0.500	1	09/13/2018 16:01	WG1165634
Vinyl chloride	U		0.118	0.500	1	09/13/2018 16:01	WG1165634
(S) Toluene-d8	*100*			*80.0-120*		*09/13/2018 16:01*	WG1165634
(S) Dibromofluoromethane	*101*			*75.0-120*		*09/13/2018 16:01*	WG1165634
(S) 4-Bromofluorobenzene	*93.1*			*77.0-126*		*09/13/2018 16:01*	WG1165634

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloroform	0.203	J	0.0860	0.500	1	09/13/2018 16:21	WG1165634
1,1-Dichloroethene	U		0.188	0.500	1	09/13/2018 16:21	WG1165634
cis-1,2-Dichloroethene	U		0.0933	0.500	1	09/13/2018 16:21	WG1165634
trans-1,2-Dichloroethene	U		0.152	0.500	1	09/13/2018 16:21	WG1165634
Tetrachloroethene	U		0.199	0.500	1	09/13/2018 16:21	WG1165634
Trichloroethene	U		0.153	0.500	1	09/13/2018 16:21	WG1165634
Vinyl chloride	U		0.118	0.500	1	09/13/2018 16:21	WG1165634
(S) Toluene-d8	*103*			*80.0-120*		*09/13/2018 16:21*	WG1165634
(S) Dibromofluoromethane	*101*			*75.0-120*		*09/13/2018 16:21*	WG1165634
(S) 4-Bromofluorobenzene	*90.3*			*77.0-126*		*09/13/2018 16:21*	WG1165634

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloroform	0.284	J	0.0860	0.500	1	09/13/2018 16:41	WG1165634
1,1-Dichloroethene	U		0.188	0.500	1	09/13/2018 16:41	WG1165634
cis-1,2-Dichloroethene	U		0.0933	0.500	1	09/13/2018 16:41	WG1165634
trans-1,2-Dichloroethene	U		0.152	0.500	1	09/13/2018 16:41	WG1165634
Tetrachloroethene	U		0.199	0.500	1	09/13/2018 16:41	WG1165634
Trichloroethene	U		0.153	0.500	1	09/13/2018 16:41	WG1165634
Vinyl chloride	U		0.118	0.500	1	09/13/2018 16:41	WG1165634
(S) Toluene-d8	*105*			*80.0-120*		*09/13/2018 16:41*	WG1165634
(S) Dibromofluoromethane	*104*			*75.0-120*		*09/13/2018 16:41*	WG1165634
(S) 4-Bromofluorobenzene	*94.0*			*77.0-126*		*09/13/2018 16:41*	WG1165634

Method Blank (MB)

(MB) R3341822-3 09/13/18 12:41

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Chloroform	U		0.0860	0.500
1,1-Dichloroethene	U		0.188	0.500
cis-1,2-Dichloroethene	U		0.0933	0.500
trans-1,2-Dichloroethene	U		0.152	0.500
Tetrachloroethene	U		0.199	0.500
Trichloroethene	U		0.153	0.500
Vinyl chloride	U		0.118	0.500
(S) Toluene-d8	*106*			*80.0-120*
(S) Dibromofluoromethane	*103*			*75.0-120*
(S) 4-Bromofluorobenzene	*94.1*			*77.0-126*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3341822-1 09/13/18 11:41 • (LCSD) R3341822-2 09/13/18 12:01

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Chloroform	25.0	25.1	25.0	100	100	73.0-120			0.306	20
1,1-Dichloroethene	25.0	23.0	23.1	91.8	92.4	71.0-124			0.657	20
cis-1,2-Dichloroethene	25.0	23.1	22.2	92.5	88.7	73.0-120			4.16	20
trans-1,2-Dichloroethene	25.0	24.3	24.3	97.3	97.1	73.0-120			0.231	20
Tetrachloroethene	25.0	27.2	28.5	109	114	72.0-132			4.58	20
Trichloroethene	25.0	24.3	24.9	97.0	99.6	78.0-124			2.63	20
Vinyl chloride	25.0	22.8	22.6	91.1	90.3	67.0-131			0.824	20
(S) Toluene-d8				*101*	*104*	*80.0-120*				
(S) Dibromofluoromethane				*102*	*102*	*75.0-120*				
(S) 4-Bromofluorobenzene				*92.3*	*92.3*	*77.0-126*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
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Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

Succeed Environmental Consulting
6028 NE 49th Avenue
Portland, OR 97218

Billing Information:
Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Prps Chk

Report to: **Andrew Blake**

Email To: **ablake@succeed-env.com**

Project Description: —

City/State Collected: Tacoma, WA

Phone: **971-371-0404**
Fax:

Client Project # NE-1

Lab Project # **SUCENVPOR**

Collected by (print): **Andrew Blake**

Site/Facility ID # —

P.O. # —

Collected by (signature):

Quote # —

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

No. of Cntrs

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1025020
D018

Acctnum: **SUCENVPOR**
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Chloroform, PCE, TCE, VC, DCE's (EPA 8260C)	Remarks	Sample # (lab only)
EB	—	W	—	9/10/18	9:00	3	X		-01
MW-3	—	W	—	9/10/18	10:30	3	X		-02
MW-3 (Dup)	—	W	—	9/10/18	10:30	3	X		-03

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Samples returned via:
___ UPS X FedEx ___ Courier _____

Tracking # 4510 1654 1119

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	9/10/18	FEDEX	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Temp: 1.9 °C Bottles Received: 9

If preservation required by Login: Date/Time

Date: 9/12/18 Time: 8:45

Hold:

Condition: NCF / OK

Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Friday, September 14, 2018

Andrew S. Blake, R.G., L.G.
Succeed Environmental Consulting
6028 NE 49th Ave.
Portland, OR 97218

RE: A8I0224 - HE-1-01 - HE-1

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A8I0224, which was received by the laboratory on 9/11/2018 at 9:10:00AM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of final reporting, unless prior arrangements have been made.

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Philip Nerenberg, Lab Director

Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8I0224 - 09 14 18 1356**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
EB	**A8I0224-01**	**Water**	**09/10/18 09:00**	**09/11/18 09:10**
MW-3	**A8I0224-02**	**Water**	**09/10/18 10:30**	**09/11/18 09:10**
MW-3 (Dup)	**A8I0224-03**	**Water**	**09/10/18 10:30**	**09/11/18 09:10**

Apex Laboratories

Philip Nerenberg, Lab Director

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Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8I0224 - 09 14 18 1356**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
EB (A8I0224-01)				**Matrix: Water**			**Batch: 8090605**	
Chloroform	ND	0.500	1.00	ug/L	1	09/11/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits: 80-120 %*	*1*	*09/11/18*	*EPA 8260C*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*09/11/18*	*EPA 8260C*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*09/11/18*	*EPA 8260C*	
MW-3 (A8I0224-02)				**Matrix: Water**			**Batch: 8090605**	
Chloroform	ND	0.500	1.00	ug/L	1	09/11/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits: 80-120 %*	*1*	*09/11/18*	*EPA 8260C*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*09/11/18*	*EPA 8260C*	
4-Bromofluorobenzene (Surr)			*98 %*	*80-120 %*	*1*	*09/11/18*	*EPA 8260C*	
MW-3 (Dup) (A8I0224-03)				**Matrix: Water**			**Batch: 8090605**	
Chloroform	ND	0.500	1.00	ug/L	1	09/11/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
Tetrachloroethene (PCE)	**0.213**	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	**J**
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	ug/L	1	09/11/18	EPA 8260C	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits: 80-120 %*	*1*	*09/11/18*	*EPA 8260C*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*09/11/18*	*EPA 8260C*	
4-Bromofluorobenzene (Surr)			*98 %*	*80-120 %*	*1*	*09/11/18*	*EPA 8260C*	

Apex Laboratories

Philip Nerenberg, Lab Director

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Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8I0224 - 09 14 18 1356**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8090605 - EPA 5030B							**Water**					
Blank (8090605-BLK1)			Prepared: 09/11/18 10:48 Analyzed: 09/11/18 12:09									
EPA 8260C												
Chloroform	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*			*"*				
LCS (8090605-BS1)			Prepared: 09/11/18 10:48 Analyzed: 09/11/18 11:15									
EPA 8260C												
Chloroform	22.5	0.500	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
1,1-Dichloroethene	21.1	0.200	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
cis-1,2-Dichloroethene	20.9	0.200	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
trans-1,2-Dichloroethene	20.5	0.200	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
Tetrachloroethene (PCE)	21.8	0.200	0.400	ug/L	1	20.0	---	109	80-120%	---	---	
Trichloroethene (TCE)	22.4	0.200	0.400	ug/L	1	20.0	---	112	80-120%	---	---	
Vinyl chloride	19.6	0.200	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 102 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Duplicate (8090605-DUP1)			Prepared: 09/11/18 11:41 Analyzed: 09/11/18 14:51									
QC Source Sample: Non-SDG (A8I0227-05)												
Chloroform	ND	50.0	100	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	20.0	40.0	ug/L	100	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	20.0	40.0	ug/L	100	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	20.0	40.0	ug/L	100	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	20.0	40.0	ug/L	100	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	20.0	40.0	ug/L	100	---	ND	---	---	---	30%	

Apex Laboratories

Philip Nerenberg, Lab Director

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Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

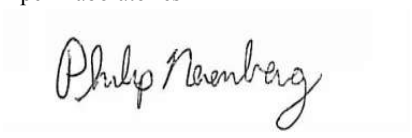
Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8I0224 - 09 14 18 1356**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8090605 - EPA 5030B							**Water**					
Duplicate (8090605-DUP1)			Prepared: 09/11/18 11:41 Analyzed: 09/11/18 14:51									
QC Source Sample: Non-SDG (A8I0227-05)												
Vinyl chloride	ND	20.0	40.0	ug/L	100	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*	*Limits: 80-120 %*			*Dilution: 1x*					
Toluene-d8 (Surr)			*97 %*	*80-120 %*			*"*					
4-Bromofluorobenzene (Surr)			*96 %*	*80-120 %*			*"*					
Matrix Spike (8090605-MS2)			Prepared: 09/11/18 17:00 Analyzed: 09/11/18 21:37									
QC Source Sample: Non-SDG (A8I0227-07RE1)												
EPA 8260C												
Chloroform	464	10.0	20.0	ug/L	20	400	ND	116	79-124%	---	---	
1,1-Dichloroethene	443	4.00	8.00	ug/L	20	400	ND	111	71-131%	---	---	
cis-1,2-Dichloroethene	424	4.00	8.00	ug/L	20	400	9.32	104	78-123%	---	---	
trans-1,2-Dichloroethene	421	4.00	8.00	ug/L	20	400	ND	105	75-124%	---	---	
Tetrachloroethene (PCE)	447	4.00	8.00	ug/L	20	400	ND	112	74-129%	---	---	
Trichloroethene (TCE)	449	4.00	8.00	ug/L	20	400	ND	112	79-123%	---	---	
Vinyl chloride	413	4.00	8.00	ug/L	20	400	ND	103	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 104 %*	*Limits: 80-120 %*			*Dilution: 1x*					
Toluene-d8 (Surr)			*96 %*	*80-120 %*			*"*					
4-Bromofluorobenzene (Surr)			*94 %*	*80-120 %*			*"*					
Matrix Spike Dup (8090605-MSD2)			Prepared: 09/11/18 17:00 Analyzed: 09/11/18 22:04									
QC Source Sample: Non-SDG (A8I0227-07RE1)												
Chloroform	448	10.0	20.0	ug/L	20	400	ND	112	79-124%	3	30%	
1,1-Dichloroethene	433	4.00	8.00	ug/L	20	400	ND	108	71-131%	2	30%	
cis-1,2-Dichloroethene	420	4.00	8.00	ug/L	20	400	9.32	103	78-123%	0.9	30%	
trans-1,2-Dichloroethene	410	4.00	8.00	ug/L	20	400	ND	102	75-124%	3	30%	
Tetrachloroethene (PCE)	443	4.00	8.00	ug/L	20	400	ND	111	74-129%	0.9	30%	
Trichloroethene (TCE)	444	4.00	8.00	ug/L	20	400	ND	111	79-123%	1	30%	
Vinyl chloride	409	4.00	8.00	ug/L	20	400	ND	102	58-137%	1	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*	*Limits: 80-120 %*			*Dilution: 1x*					
Toluene-d8 (Surr)			*95 %*	*80-120 %*			*"*					
4-Bromofluorobenzene (Surr)			*97 %*	*80-120 %*			*"*					

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8I0224 - 09 14 18 1356**

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260C

Prep: EPA 5030B

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 8090605							
A8I0224-01	Water	EPA 8260C	09/10/18 09:00	09/11/18 11:41	5mL/5mL	5mL/5mL	1.00
A8I0224-02	Water	EPA 8260C	09/10/18 10:30	09/11/18 11:41	5mL/5mL	5mL/5mL	1.00
A8I0224-03	Water	EPA 8260C	09/10/18 10:30	09/11/18 11:41	5mL/5mL	5mL/5mL	1.00

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

J Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

DET Analyte DETECTED at or above the detection or reporting limit.

ND Analyte NOT DETECTED at or above the detection or reporting limit.

NR Result Not Reported

RPD Relative Percent Difference

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.

" dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.

" wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.

" " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).
-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

Apex Laboratories

Philip Nerenberg, Lab Director

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Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8I0224 - 09 14 18 1356**

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the blank results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories

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Philip Nerenberg, Lab Director

Apex Laboratories, LLC

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Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8I0224 - 09 14 18 1356**

LABORATORY ACCREDITATION INFORMATION

TNI Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
All reported analytes are included in Apex Laboratories' current ORELAP scope.					

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation.
Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provded by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

Philip Nerenberg, Lab Director

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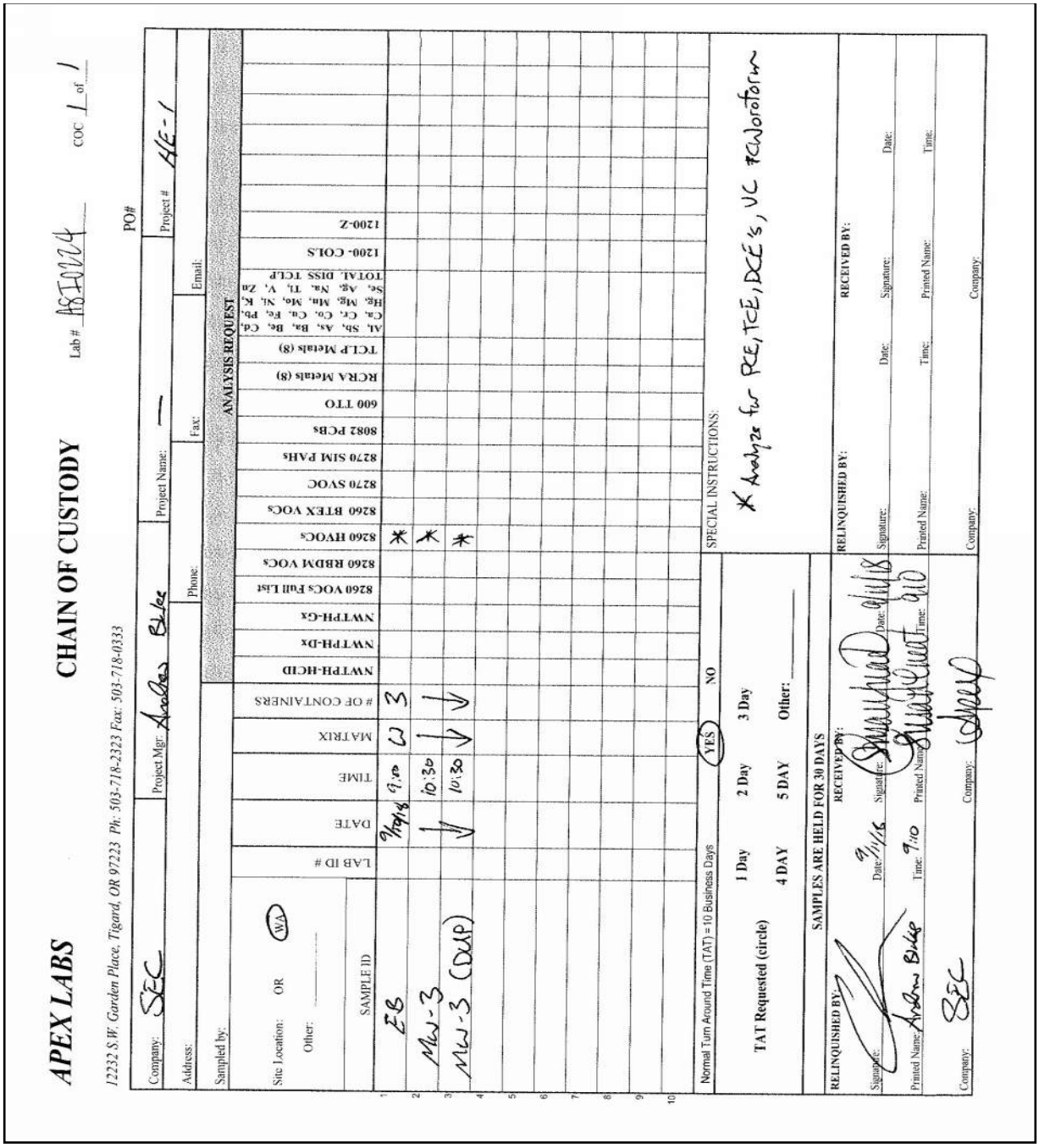
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8I0224 - 09 14 18 1356**



APEX LABS

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

CHAIN OF CUSTODY

Lab # A8I0224 COC 1 of 1

Company: SEC | Project Mgr: Andrew Blake | Project Name: — | Project #: HE-1 | PO#

Address: | Phone: | Fax: | Email:

Sampled by:

Site Location: OR (WA)

Other: _____

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOCs Full List	8260 RBDM VOCs	8260 HVOCs	8260 BTEX VOCs	8270 SVOC	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS TCLP	1200- COLS	1200-Z
1 EB		9/14/18	9:20	W	3						*										
2 MW-3		↓	10:30	↓	↓						*										
3 MW-3 (DUP)		↓	10:30	↓	↓						*										
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Normal Turn Around Time (TAT) = 10 Business Days (YES) NO

SPECIAL INSTRUCTIONS:

* Analyze for PCE, TCE, DCE's, VC #Chloroform

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: _____

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: _____ Printed Name: Andrew Blake Company: SEC

RECEIVED BY: Signature: [signature] Printed Name: [signature] Date: 9/14/18 Time: 9:10

RELINQUISHED BY: Signature: [signature] Printed Name: [signature] Date: 9/14/18 Time: 9:10 Company: Apex

RECEIVED BY: Signature: _____ Printed Name: _____ Date: _____ Time: _____ Company: _____

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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503-718-2323
EPA ID: OR01039

Succeed Environmental Consulting	Project: **HE-1-01**	
6028 NE 49th Ave.	Project Number: **HE-1**	**Report ID:**
Portland, OR 97218	Project Manager: **Andrew S. Blake, R.G., L.G.**	**A8I0224 - 09 14 18 1356**

APEX LABS COOLER RECEIPT FORM

Client: SEC Element WO#: A8I0224

Project/Project #: HE-1

Delivery info:

Date/Time Received: 9/11/18 @ 910 By: (8)

Delivered by: Apex___ Client X ESS___ FedEx___ UPS___ Swift___ Senvoy___ SDS___ Other___

Cooler Inspection Inspected by: (8) : 9/11/18 @ 910

Chain of Custody Included? Yes X No___ Custody Seals? Yes___ No X

Signed/Dated by Client? Yes X No___

Signed/Dated by Apex? Yes X No___

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)	5.0						
Received on Ice? (Y/N)	Y						
Temp. Blanks? (Y/N)	N						
Ice Type: (Gel/Real/Other)	Gel						
Condition:	good						

Cooler out of temp? (Y/N) Possible reason why:

If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA

Samples Inspection: Inspected by: (8) : 9/11/18 @ 912

All Samples Intact? Yes X No___ Comments:

Bottle Labels/COCs agree? Yes X No___ Comments:

Containers/Volumes Received Appropriate for Analysis? Yes X No___ Comments:

Do VOA Vials have Visible Headspace? Yes___ No X NA___

Comments

Water Samples: pH Checked and Appropriate (except VOAs): Yes___ No___ NA X

Comments:

Additional Information:

Labeled by: (8) Witness: W Cooler Inspected by: (8) See Project Contact Form: Y

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Philip Nerenberg

Philip Nerenberg, Lab Director

ESN NORTHWEST
Environmental
Services Network

December 23, 2015

Becky Dilba
Associated Environmental Group, Inc.
605 11th Ave. SE, Suite 201
Olympia, WA 98501

Dear Ms. Dilba:

Please find enclosed the analytical data report for the Adams Street Building Project in Tacoma, Washington. Probe services were conducted on December 9, 2015. Soil vapor samples were analyzed for Chlorinated VOC's by Method 8260 on December 11, 2015.

The results of the analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Associated Environmental Group, Inc. for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

1210 Eastside Street SE, Suite 200 ■ Olympia, Washington 98501 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
PROJECT ADAMS ST BUILDING
PROJECT #15-171
Tacoma, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analyses of Volatile Organic Componds in Air by Method 8260

Sample ID	Molecular	Reporting	MB	LCS	LCSD	B1	B2	B3	B4
Date Sampled	Weight	Limits				12/09/15	12/09/15	12/09/15	12/09/15
Date Analyzed	g	ug/m3	12/11/15	12/11/15	12/11/15	12/11/15	12/11/15	12/11/15	12/11/15
Dichlorodifluoromethane	120.9	10	nd			nd	nd	nd	nd
Chloromethane	50.49	50	nd			nd	nd	nd	nd
Vinyl chloride	62.50	10	nd	102%	94%	nd	nd	nd	nd
Chloroethane	64.52	10	nd			nd	nd	nd	nd
Trichlorofluoromethane	137.4	10	nd			nd	nd	nd	nd
1,1-Dichloroethene	96.95	10	nd			nd	nd	nd	nd
Methylene chloride	84.93	100	nd			nd	nd	nd	nd
trans-1,2-Dichloroethene	96.95	10	nd			nd	nd	nd	nd
1,1-Dichloroethane	98.96	10	nd			nd	nd	nd	nd
cis-1,2-Dichloroethene	96.95	10	nd			nd	nd	nd	nd
2,2-Dichloropropane	113.0	10	nd			nd	nd	nd	nd
Chloroform	119.4	10	nd	120%	113%	nd	nd	nd	nd
Bromochloromethane	129.4	10	nd			nd	nd	nd	nd
1,1,1-Trichloroethane	133.4	10	nd			nd	nd	nd	nd
1,2-Dichloroethane (EDC)	98.96	10	nd			nd	nd	nd	nd
1,1-Dichloropropene	111.0	10	nd			nd	nd	nd	nd
Carbon tetrachloride	153.2	10	nd			nd	nd	nd	nd
Trichloroethene	131.4	10	nd	115%	105%	nd	nd	nd	nd
1,2-Dichloropropane	113.0	10	nd	118%	110%	nd	nd	nd	nd
Bromodichloromethane	163.8	10	nd			nd	nd	nd	nd
cis-1,3-Dichloropropene	111.0	10	nd			nd	nd	nd	nd
trans-1,3-Dichloropropene	111.0	10	nd			nd	nd	nd	nd
1,1,2-Trichloroethane	133.4	10	nd			nd	nd	nd	nd
1,3-Dichloropropane	113.0	10	nd			nd	nd	nd	nd
Dibromochloromethane	208.3	10	nd			nd	nd	nd	nd
Tetrachloroethene	165.8	10	nd	99%	90%	**340**	**1,200**	**570**	nd
Chlorobenzene	112.6	10	nd	109%	100%	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	167.9	10	nd			nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	167.9	10	nd			nd	nd	nd	nd
1,2,3-Trichloropropane	147.4	10	nd			nd	nd	nd	nd
1,3-Dichlorobenzene	147.0	10	nd			nd	nd	nd	nd
1,4-Dichlorobenzene	147.0	10	nd			nd	nd	nd	nd
1,2-Dichlorobenzene	147.0	10	nd			nd	nd	nd	nd
1,2,4-Trichlorobenzene	181.5	75	nd			nd	nd	nd	nd
Hexachloro-1,3-butadiene	260.8	100	nd			nd	nd	nd	nd
Surrogate recoveries									
Dibromofluoromethane			105%	102%	101%	94%	105%	104%	103%
Toluene-d8			103%	95%	93%	103%	102%	104%	104%
4-Bromofluorobenzene			104%	92%	93%	103%	103%	101%	102%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: AES
ADDRESS: 605 11th Ave SE Suite 201
PHONE: (360) 352-9835 FAX: —
CLIENT PROJECT #: 15171 PROJECT MANAGER: B. Dilks

DATE: 12/9/15 PAGE 1 OF 1
PROJECT NAME: Adams St Buildings
LOCATION: 6707 S. Adams St. Tacoma
COLLECTOR: B. Dilks DATE OF COLLECTION: 12/9/15

Sample Number	Depth	Time	Sample Type	Container Type	TPH - HCID	TPH - Diesel & Oil	TPH - Gasoline	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos - PLM	GRO Suite	DRO Suite	WO Suite	NOTES	Total Number of Containers	Laboratory Note Number
1. B1	—	0915	Water	Tedlar				X																
2. B2	—	0935						X																
3. B3	—	0954						X																
4. B4	—	1007						X																
5.																								
6.																								
7.																								
8.																								
9.																								
10.																								
11.																								
12.																								
13.																								
14.																								
15.																								
16.																								
17.																								
18.																								

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	12/9/15	[signature]	12/9/15
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

1210 Eastside Street SE, Suite 200
Olympia, Washington 98501
Phone: 360-459-4670
Fax: 360-459-3432
Website: www.esnnw.com
E-Mail: info@esnnw.com

ESN NORTHWEST
Environmental
Services Network

January 26, 2016

Becky Dilba
Associated Environmental Group, Inc.
605 11th Ave. SE, Suite 201
Olympia, WA 98501

Dear Ms. Dilba:

Please find enclosed the analytical data report for the Adams St Building Project in Tacoma, Washington. Probe services were conducted on January 15, 2016. Soil and water samples were analyzed for Chlorinated VOC's by Method 8260 on January 19 - 22 , 2016.

The results of the analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Associated Environmental Group, Inc. for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

1210 Eastside Street SE, Suite 200 ■ Olympia, Washington 98501 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
PROJECT ADAMS ST BUILDING
PROJECT #15-171
Tacoma, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Chlorinated Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	MB	LCS	LCSD	B5-5	B5-13	B5-15	B6-4	B6-9.5	B6-13.5	B7-4
Date extracted		01/19/16	01/19/16	01/19/16	01/15/16	01/15/16	01/15/16	01/15/16	01/15/16	01/15/16	01/15/16
Date analyzed	(mg/Kg)	01/19/16	01/19/16	01/19/16	01/19/16	01/19/16	01/19/16	01/19/16	01/19/16	01/19/16	01/19/16
% Moisture					4%	8%	12%	6%	6%	8%	4%
Dichlorodifluoromethane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
Chloromethane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	82%	83%	nd	nd	nd	nd	nd	nd	nd
Chloroethane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	92%	104%	nd	nd	nd	nd	nd	nd	nd
Methylene chloride	0.05	nd			nd	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
Chloroform	0.05	nd	102%	125%	nd	nd	nd	nd	nd	nd	nd
Bromochloromethane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.05	nd			nd	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	121%	134%	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.05	nd	112%	128%	nd	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
trans-1,3-Dichloropropene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	114%	131%	nd	**0.034**	nd	**0.037**	**0.052**	nd	nd
Chlorobenzene	0.05	nd	117%	133%	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.05	nd			nd	nd	nd	nd	nd	nd	nd
Surrogate recoveries											
Dibromofluoromethane		101%	98%	101%	99%	94%	96%	97%	98%	98%	95%
Toluene-d8		107%	94%	97%	105%	101%	102%	102%	104%	102%	105%
4-Bromofluorobenzene		111%	102%	105%	108%	106%	109%	108%	111%	109%	111%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental C
PROJECT ADAMS ST BUILDING
PROJECT #15-171
Tacoma, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Chlorinated Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	B7-9	B7-13	B8-4	B8-9.5	B8-13.5	B9-4	B9-9	B9-13	B10-4.5	B10-10
Date extracted		01/15/16	01/15/16	01/15/16	01/15/16	01/15/16	01/15/16	01/15/16	01/15/16	01/15/16	01/15/16
Date analyzed	(mg/Kg)	01/19/16	01/19/16	01/19/16	01/20/16	01/20/16	01/20/16	01/20/16	01/20/16	01/20/16	01/21/16
% Moisture		4%	9%	4%	2%	15%	5%	5%	7%	9%	5%
Dichlorodifluoromethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chloromethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chloroethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Methylene chloride	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chloroform	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Bromochloromethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
trans-1,3-Dichloropropene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	**0.026**	**0.054**	**0.037**	**0.034**	**0.14**	nd	nd	nd	nd	nd
Chlorobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Surrogate recoveries											
Dibromofluoromethane		97%	95%	93%	95%	100%	104%	98%	98%	94%	100%
Toluene-d8		103%	103%	102%	102%	100%	100%	102%	100%	101%	102%
4-Bromofluorobenzene		109%	110%	107%	111%	113%	115%	113%	112%	111%	110%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
PROJECT ADAMS ST BUILDING
PROJECT #15-171
Tacoma, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Chlorinated Volatile Organic Compounds in Water by Method 8260C/5030C

Analytical Results

Date analyzed	RL (ug/L)	MB 01/22/16	LCS 01/22/16	LCSD 01/22/16	B5-W 01/22/16	B6-W 01/22/16	B7-W 01/22/16	B8-W 01/22/16	B9-W 01/22/16	B10-W 01/22/16	Trip Blank 01/22/16
Dichlorodifluoromethane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
Chloromethane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.2	nd	79%	79%	nd	nd	nd	nd	nd	nd	nd
Chloroethane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	1.0	nd	75%	72%	nd	nd	nd	nd	nd	nd	nd
Methylene chloride	1.0	nd			nd	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
Chloroform	1.0	nd	99%	101%	nd	nd	nd	nd	nd	nd	nd
Bromochloromethane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	1.0	nd			nd	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	1.0	nd	94%	97%	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	1.0	nd	99%	99%	nd	nd	nd	nd	nd	nd	nd
Bromodichloromethane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
trans-1,3-Dichloropropene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
Dibromochloromethane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	86%	91%	**1.0**	**2.3**	**5.6**	**9.6**	nd	nd	nd
Chlorobenzene	1.0	nd	91%	96%	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	1.0	nd			nd	nd	nd	nd	nd	nd	nd
Surrogate recoveries											
Dibromofluoromethane		102%	102%	98%	101%	103%	101%	105%	102%	104%	102%
Toluene-d8		103%	96%	95%	100%	103%	103%	102%	103%	102%	102%
4-Bromofluorobenzene		112%	103%	105%	114%	112%	114%	111%	112%	110%	113%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: AFG
ADDRESS: 605 11th Ave SE, Suite 201
PHONE: (360) 352-5835 FAX: —
CLIENT PROJECT #: 15-171 PROJECT MANAGER: B. Dilg

DATE: ~~1/15~~ 1/15/16 PAGE 1 OF 2
PROJECT NAME: Adams St Building
LOCATION: 6707 S. Adams St Tacoma, WA
COLLECTOR: B. Dilg DATE OF COLLECTION: 1/15

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: TPH - HCID	TPH - Diesel & Oil	TPH - Gasoline	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos - PLM	GRO Suite	DRO Suite	WO Suite	NOTES	Total Number of Containers	Laboratory Note Number
1. B5-5	5	1035	Soil	VOA/jar				X																
2. B5-13	13	1048	(	(				(																
3. B5-15	15	1048	(	(				(																
4. B6-4	4	1130	(	(				(																
5. B6-9.5	9.5	1134	(	(				(																
6. B6-13.5	13.5	1142	(	(				(																
7. B7-4	4	1220	(	(				(																
8. B7-9	9	1226	(	(				(																
9. B7-13	13	1232	(	(				(																
10. B5-W	—	1115	H2O	VOA				(																
11. B6-W	—	1205	(	(				(																
12. B7-W	—	1254	(	(				(																
13. B8-4	4	1303	Soil	VOA/jar				(																
14. B8-9.5	9.5	1306	(	(				(																
15. B8-13.5	13.5	1311	(	(				(																
16. B8-W	—	1334	H2O	VOA				(																
17. B9-4	4	1344	Soil	VOA/jar				(																
18. B9	9	1352	Soil	(				(																

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	1/15/16 1552	[signature]	1-15-16 1552
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

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Olympia, Washington 98501
Phone: 360-459-4670
Fax: 360-459-3432
Website: www.esnnw.com
E-Mail: info@esnnw.com

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: AEG
ADDRESS: 6051 11th AVE SE Suite 201, Olympia, WA
PHONE: (360) 352-9835 FAX: —
CLIENT PROJECT #: 15-171 PROJECT MANAGER: B. Dilbeck

DATE: 1/15/16 PAGE 2 OF 2
PROJECT NAME: Adams St Buildings
LOCATION: 6707 S Adams St. Tacoma, WA
COLLECTOR: B. Dilbeck DATE OF COLLECTION: 1/15/16

Sample Number	Depth	Time	Sample Type	Container Type	TPH - HCID	TPH - Diesel & Oil	TPH - Gasoline	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos - PLM	GRO Suite	DRO Suite	WO Suite	NOTES	Total Number of Containers	Laboratory Note Number
1. B9-13	13	1356	soil	VOA/jar					X															
2. B9-W	—	1415	H2O	VOA					X															
3. B10-4.5	4.5	1479	soil	VOA/jar																				
4. B10-10	10	1423	soil	"																				
5. B10-																								
6. B10-W	—	1449	H2O	VOA																				
7.																								
8.																								
9.																								
10.																								
11.																								
12.																								
13.																								
14.																								
15.																								
16.																								
17.																								
18.																								

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	1/15/16 1552	[signature]	1.15.16 1552
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

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ESN NORTHWEST
Environmental
Services Network

March 9, 2016

Becky Dilba
Associated Environmental Group, Inc.
605 11th Ave. SE, Suite 201
Olympia, WA 98501

Dear Ms. Dilba:

Please find enclosed the analytical data report for the Adams Street Building Project in Tacoma, Washington. Probe services were conducted on February 23, 2016. Soil samples were analyzed for VOC's by Method 8260 on March 3, 2016.

The results of the analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Associated Environmental Group, Inc. for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

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Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
PROJECT ADAMS ST BUILDING
PROJECT #15-171
Tacoma, Washington

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Analysis of Chlorinated Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	MB	LCS	LCSD	MW1-10	MW1-13	MW2-9.5	MW2-15	MW3-9.5	MW3-13
Date extracted		03/03/16	03/03/16	03/03/16	02/23/16	02/23/16	02/23/16	02/23/16	02/23/16	02/23/16
Date analyzed	(mg/Kg)	03/03/16	03/03/16	03/03/16	03/03/16	03/03/16	03/03/16	03/03/16	03/03/16	03/03/16
% Moisture					4%	8%	5%	9%	7%	14%
Dichlorodifluoromethane	0.05	nd			nd	nd	nd	nd	nd	nd
Chloromethane	0.05	nd			nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	107%	99%	nd	nd	nd	nd	nd	nd
Chloroethane	0.05	nd			nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd			nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	96%	89%	nd	nd	nd	nd	nd	nd
Methylene chloride	0.05	nd			nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd			nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd			nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd			nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd			nd	nd	nd	nd	nd	nd
Chloroform	0.05	nd	114%	109%	nd	nd	nd	nd	nd	nd
Bromochloromethane	0.05	nd			nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	0.05	nd			nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.05	nd			nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.05	nd			nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.05	nd			nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd			nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.05	nd	111%	106%	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.05	nd			nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.05	nd			nd	nd	nd	nd	nd	nd
trans-1,3-Dichloropropene	0.05	nd			nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd			nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd			nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.05	nd			nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	81%	75%	nd	nd	nd	nd	**0.06**	**0.12**
Chlorobenzene	0.05	nd	84%	80%	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd			nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd			nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd			nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.05	nd			nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.05	nd			nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.05	nd			nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.05	nd			nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd			nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd			nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd			nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.05	nd			nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.05	nd			nd	nd	nd	nd	nd	nd
Surrogate recoveries										
Dibromofluoromethane		111%	113%	112%	112%	111%	102%	107%	111%	106%
Toluene-d8		89%	84%	84%	92%	90%	90%	87%	89%	90%
4-Bromofluorobenzene		105%	97%	95%	102%	101%	105%	101%	106%	107%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
PROJECT ADAMS ST BUILDING
PROJECT #15-171
Tacoma, Washington

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lab@esnnw.com

Analysis of Chlorinated Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	MW4-9.5	MW4-15
Date extracted		02/23/16	02/23/16
Date analyzed	(mg/Kg)	03/03/16	03/03/16
% Moisture		3%	20%
Dichlorodifluoromethane	0.05	nd	nd
Chloromethane	0.05	nd	nd
Vinyl chloride	0.02	nd	nd
Chloroethane	0.05	nd	nd
Trichlorofluoromethane	0.05	nd	nd
1,1-Dichloroethene	0.05	nd	nd
Methylene chloride	0.05	nd	nd
trans-1,2-Dichloroethene	0.05	nd	nd
1,1-Dichloroethane	0.05	nd	nd
cis-1,2-Dichloroethene	0.05	nd	nd
2,2-Dichloropropane	0.05	nd	nd
Chloroform	0.05	nd	nd
Bromochloromethane	0.05	nd	nd
1,1,1-Trichloroethane	0.05	nd	nd
1,2-Dichloroethane (EDC)	0.05	nd	nd
1,1-Dichloropropene	0.05	nd	nd
Carbon tetrachloride	0.05	nd	nd
Trichloroethene (TCE)	0.02	nd	nd
1,2-Dichloropropane	0.05	nd	nd
Bromodichloromethane	0.05	nd	nd
cis-1,3-Dichloropropene	0.05	nd	nd
trans-1,3-Dichloropropene	0.05	nd	nd
1,1,2-Trichloroethane	0.05	nd	nd
1,3-Dichloropropane	0.05	nd	nd
Dibromochloromethane	0.05	nd	nd
Tetrachloroethene (PCE)	0.02	nd	**0.28**
Chlorobenzene	0.05	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd
1,2,3-Trichloropropane	0.05	nd	nd
2-Chlorotoluene	0.05	nd	nd
4-Chlorotoluene	0.05	nd	nd
1,3-Dichlorobenzene	0.05	nd	nd
1,4-Dichlorobenzene	0.05	nd	nd
1,2-Dichlorobenzene	0.05	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd	nd
1,2,4-Trichlorobenzene	0.05	nd	nd
Hexachloro-1,3-butadiene	0.05	nd	nd
1,2,3-Trichlorobenzene	0.05	nd	nd
Surrogate recoveries			
Dibromofluoromethane		108%	107%
Toluene-d8		92%	88%
4-Bromofluorobenzene		103%	103%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: AEG

ADDRESS: 6051 Tilley Rd SE, Suite 201, Olympia

PHONE: (360)352-9835 FAX:

CLIENT PROJECT #: 15-171 PROJECT MANAGER: B. Pilloc

DATE: 2/23/16 PAGE _____ OF _____

PROJECT NAME: Adams St Bldg

LOCATION: 6707 S Adams St, Tacoma

COLLECTOR: B. Pilloc DATE OF COLLECTION: 2/22/16

Sample Number	Depth	Time	Sample Type	Container Type	BTEX	NOTES	Total Number of Containers	Laboratory Note Number
1. MW1-5	5	0935	Soil	Vial/Jar	X	Hold	3	
2. MW1-10	10	0940				~~Hold~~ Run		
3. MW1-13	13	0945						
4. MW1-18	18	0955				Hold		
5. MW2-5	5	1135				Hold		
6. MW2-9.5	9.5	1139				~~Hold~~ Run		
7. MW2-15	15	1144						
8. MW2-19	19	1157				Hold		
9. MW3-5	5	1258				Hold		
10. MW3-9.5	9.5	1302				~~Hold~~ Run		
11. MW3-13	13	1310						
12. MW3-15	15	1310				Hold		
13. MW4-5	5	1400				Hold		
14. MW4-9.5	9.5	1409						
15. MW4-15	15	1422				-		
16.								
17.								
18.								

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	2/23/16 1600	[signature]	2.23.16 1600
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

1210 Eastside Street SE, Suite 200
Olympia, Washington 98501

Phone: 360-459-4670
Fax: 360-459-3432

Website: www.esnnw.com
E-Mail: info@esnnw.com

ESN NORTHWEST
Environmental
Services Network

April 7, 2016

Becky Dilba
Associated Environmental Group, Inc.
605 11th Ave. SE, Suite 201
Olympia, WA 98501

Dear Ms. Dilba:

Please find enclosed the analytical data report for the Adams St Building in Tacoma, Washington. Soil samples were analyzed for Chlorinated VOC's by Method 8260 on March 3, 2016.

The results of the analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Associated Environmental Group, Inc. for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

1210 Eastside Street SE, Suite 200 ■ Olympia, Washington 98501 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
PROJECT ADAMS ST BUILDING
PROJECT #15-171
Tacoma, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Chlorinated Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	MB	LCS	LCSD	MW3-5	MW3-15
Date extracted		04/04/16	04/04/16	04/04/16	02/23/16	02/23/16
Date analyzed	(mg/Kg)	04/04/16	04/04/16	04/04/16	03/03/16	03/03/16
% Moisture					2%	12%
Dichlorodifluoromethane	0.05	nd			nd	nd
Chloromethane	0.05	nd			nd	nd
Vinyl chloride	0.02	nd	94%	97%	nd	nd
Chloroethane	0.05	nd			nd	nd
Trichlorofluoromethane	0.05	nd			nd	nd
1,1-Dichloroethene	0.05	nd	70%	65%	nd	nd
Methylene chloride	0.05	nd			nd	nd
trans-1,2-Dichloroethene	0.05	nd			nd	nd
1,1-Dichloroethane	0.05	nd			nd	nd
cis-1,2-Dichloroethene	0.05	nd			nd	nd
2,2-Dichloropropane	0.05	nd			nd	nd
Chloroform	0.05	nd	117%	113%	nd	nd
Bromochloromethane	0.05	nd			nd	nd
1,1,1-Trichloroethane	0.05	nd			nd	nd
1,2-Dichloroethane (EDC)	0.05	nd			nd	nd
1,1-Dichloropropene	0.05	nd			nd	nd
Carbon tetrachloride	0.05	nd			nd	nd
Trichloroethene (TCE)	0.02	nd			nd	nd
1,2-Dichloropropane	0.05	nd	139%	138%	nd	nd
Bromodichloromethane	0.05	nd			nd	nd
cis-1,3-Dichloropropene	0.05	nd			nd	nd
trans-1,3-Dichloropropene	0.05	nd			nd	nd
1,1,2-Trichloroethane	0.05	nd			nd	nd
1,3-Dichloropropane	0.05	nd			nd	nd
Dibromochloromethane	0.05	nd			nd	nd
Tetrachloroethene (PCE)	0.02	nd	112%	111%	**0.060**	**0.74**
Chlorobenzene	0.05	nd	111%	113%	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd			nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd			nd	nd
1,2,3-Trichloropropane	0.05	nd			nd	nd
2-Chlorotoluene	0.05	nd			nd	nd
4-Chlorotoluene	0.05	nd			nd	nd
1,3-Dichlorobenzene	0.05	nd			nd	nd
1,4-Dichlorobenzene	0.05	nd			nd	nd
1,2-Dichlorobenzene	0.05	nd			nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd			nd	nd
1,2,4-Trichlorobenzene	0.05	nd			nd	nd
Hexachloro-1,3-butadiene	0.05	nd			nd	nd
1,2,3-Trichlorobenzene	0.05	nd			nd	nd
Surrogate recoveries						
Dibromofluoromethane		103%	100%	100%	102%	104%
Toluene-d8		99%	86%	87%	90%	92%
4-Bromofluorobenzene		116%	105%	104%	113%	113%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: AEG

ADDRESS: 605 11th Ave SE, Suite 201, Olympia

PHONE: (360)352-9835 FAX:

CLIENT PROJECT #: 15-171 PROJECT MANAGER: B. Bilby

DATE: 2/23/16 PAGE ____ OF ____

PROJECT NAME: Adams St Bldg

LOCATION: 6707 S Adams St, Tacoma

COLLECTOR: B. Bilby DATE OF COLLECTION: 2/23/16

Sample Number	Depth	Time	Sample Type	Container Type	BTEX	NOTES	Total Number of Containers	Laboratory Note Number
1. MW1-5	5	0935	Soil	Vial/Jar	X	Hold	3	
2. MW1-10	10	0940				~~Hold~~ Run		
3. MW1-13	13	0946						
4. MW1-18	18	0955				Hold		
5. MW2-5	5	1135				Hold		
6. MW2-9.5	9.5	1139				~~Hold~~ Run		
7. MW2-15	15	1144						
8. MW2-19	19	1157				Hold		
9. MW3-5	5	1258				Hold		
10. MW3-9.5	9.5	1302				~~Hold~~ Run		
11. MW3-13	13	1310						
12. MW3-15	15	1310				Hold		
13. MW4-5	5	1420				Hold		
14. MW4-9.5	9.5	1409						
15. MW4-15	15	1422						
16.								
17.								
18.								

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	2/23/16 1600	[signature]	2-23-16 1600
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR (5 DAY)

1210 Eastside Street SE, Suite 200
Olympia, Washington 98501
Phone: 360-459-4670
Fax: 360-459-3432
Website: www.esnnw.com
E-Mail: info@esnnw.com

ESN NORTHWEST
Environmental
Services Network

March 25, 2016

Becky Dilba
Associated Environmental Group, Inc.
605 11th Ave. SE, Suite 201
Olympia, WA 98501

Dear Ms. Dilba:

Please find enclosed the analytical data report for the Adams St Building Project in Tacoma, Washington. Water samples were analyzed for Chlorinated VOC's by Method 8260 on March 23, 2016.

The results of the analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Associated Environmental Group, Inc. for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

1210 Eastside Street SE, Suite 200 ■ Olympia, Washington 98501 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
PROJECT ADAMS ST BUILDING
PROJECT #15-171
Tacoma, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Chlorinated Volatile Organic Compounds in Water by Method 8260C/5030C

Analytical Results

	RL	MB	LCS	LCSD	MW-2	MW-3	MW-4	MW-1
Date analyzed	(ug/L)	03/23/16	03/23/16	03/23/16	03/23/16	03/23/16	03/23/16	03/23/16
Dichlorodifluoromethane	1.0	nd			nd	nd	nd	nd
Chloromethane	1.0	nd			nd	nd	nd	nd
Vinyl chloride	0.2	nd	98%	107%	nd	nd	nd	nd
Chloroethane	1.0	nd			nd	nd	nd	nd
Trichlorofluoromethane	1.0	nd			nd	nd	nd	nd
1,1-Dichloroethene	1.0	nd	131%	136%	nd	nd	nd	nd
Methylene chloride	1.0	nd			nd	nd	nd	nd
trans-1,2-Dichloroethene	1.0	nd			nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd			nd	nd	nd	nd
cis-1,2-Dichloroethene	1.0	nd			nd	nd	nd	nd
2,2-Dichloropropane	1.0	nd			nd	nd	nd	nd
Chloroform	1.0	nd	122%	132%	nd	nd	nd	nd
Bromochloromethane	1.0	nd			nd	nd	nd	nd
1,1,1-Trichloroethane	1.0	nd			nd	nd	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd			nd	nd	nd	nd
1,1-Dichloropropene	1.0	nd			nd	nd	nd	nd
Carbon tetrachloride	1.0	nd			nd	nd	nd	nd
Trichloroethene (TCE)	1.0	nd	121%	132%	nd	nd	nd	nd
1,2-Dichloropropane	1.0	nd			nd	nd	nd	nd
Bromodichloromethane	1.0	nd			nd	nd	nd	nd
cis-1,3-Dichloropropene	1.0	nd			nd	nd	nd	nd
trans-1,3-Dichloropropene	1.0	nd			nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd			nd	nd	nd	nd
1,3-Dichloropropane	1.0	nd			nd	nd	nd	nd
Dibromochloromethane	1.0	nd			nd	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	105%	117%	nd	**10**	**2.0**	nd
Chlorobenzene	1.0	nd	104%	114%	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd			nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd			nd	nd	nd	nd
1,2,3-Trichloropropane	1.0	nd			nd	nd	nd	nd
2-Chlorotoluene	1.0	nd			nd	nd	nd	nd
4-Chlorotoluene	1.0	nd			nd	nd	nd	nd
1,3-Dichlorobenzene	1.0	nd			nd	nd	nd	nd
1,4-Dichlorobenzene	1.0	nd			nd	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd			nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd			nd	nd	nd	nd
1,2,4-Trichlorobenzene	1.0	nd			nd	nd	nd	nd
Hexachloro-1,3-butadiene	1.0	nd			nd	nd	nd	nd
1,2,3-Trichlorobenzene	1.0	nd			nd	nd	nd	nd
Surrogate recoveries								
Dibromofluoromethane		102%	106%	105%	101%	105%	108%	106%
Toluene-d8		99%	90%	91%	98%	100%	101%	99%
4-Bromofluorobenzene		108%	102%	102%	110%	110%	111%	113%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%
* Analysis of LCSD yielded high recovery for 1,1-Dicholoroethene, because this analyte was not detected in the samples, no further action was taken.

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: AEG
ADDRESS: 605 11th Ave SE, Suite 201
PHONE: _____ FAX: _____
CLIENT PROJECT #: 15-171 PROJECT MANAGER: B. Dilbeck

DATE: 3/17/16 PAGE 1 OF 1
PROJECT NAME: Adams St Building
LOCATION: 6707 S Adams St, Tacoma, WA
COLLECTOR: B. Dilbeck DATE OF COLLECTION: 3/17/16

Sample Number	Depth	Time	Sample Type	Container Type	TPH - HCID	TPH - Diesel & Oil	TPH - Gasoline	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos - PLM	GRO Suite	DRO Suite	WO Suite	NOTES	Total Number of Containers	Laboratory Note Number
1. mw-2	–	1010	H_2O	VOAX2					X														2	
2. mw-3	–	1033	(	(					X														2	
3. mw-4	–	1058	)	)					X														2	
4. mw-1	–	1127	)	)					X														2	
5.																								
6.																								
7.																								
8.																								
9.																								
10.																								
11.																								
12.																								
13.																								
14.																								
15.																								
16.																								
17.																								
18.																								

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	3/17/16 1409	[signature]	3/17/16
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

1210 Eastside Street SE, Suite 200
Olympia, Washington 98501
Phone: 360-459-4670
Fax: 360-459-3432
Website: www.esnnw.com
E-Mail: info@esnnw.com

ANALYTICAL REPORT

November 27, 2017

Succeed Environmental Consulting

Sample Delivery Group:	L952230
Samples Received:	11/18/2017
Project Number:	HE-1-01
Description:	

Report To: Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Entire Report Reviewed By: Brian Ford

Brian Ford
Technical Service Representative

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SV-1 L952230-01 Air

Collected by: Andrew Blake | Collected date/time: 11/16/17 15:30 | Received date/time: 11/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1045184	2	11/21/17 19:40	11/21/17 19:40	AMC

SV-2 L952230-02 Air

Collected by: Andrew Blake | Collected date/time: 11/16/17 15:40 | Received date/time: 11/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1045184	2	11/21/17 20:23	11/21/17 20:23	AMC

SV-3 L952230-03 Air

Collected by: Andrew Blake | Collected date/time: 11/16/17 15:45 | Received date/time: 11/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1045184	2	11/21/17 21:04	11/21/17 21:04	AMC

SV-4 L952230-04 Air

Collected by: Andrew Blake | Collected date/time: 11/16/17 15:50 | Received date/time: 11/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1045184	2	11/21/17 21:46	11/21/17 21:46	AMC

SV-5 L952230-05 Air

Collected by: Andrew Blake | Collected date/time: 11/16/17 15:55 | Received date/time: 11/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1045184	2	11/21/17 22:28	11/21/17 22:28	AMC

SV-6 L952230-06 Air

Collected by: Andrew Blake | Collected date/time: 11/16/17 15:58 | Received date/time: 11/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1045184	2	11/21/17 23:10	11/21/17 23:10	AMC
Volatile Organic Compounds (MS) by Method TO-15	WG1045674	100	11/22/17 17:47	11/22/17 17:47	AMC

SV-7 L952230-07 Air

Collected by: Andrew Blake | Collected date/time: 11/16/17 16:05 | Received date/time: 11/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1045184	2	11/21/17 23:52	11/21/17 23:52	AMC

SV-8 L952230-08 Air

Collected by: Andrew Blake | Collected date/time: 11/16/17 16:15 | Received date/time: 11/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1045171	2	11/21/17 22:27	11/21/17 22:27	MBF

SV-9 L952230-09 Air

Collected by	Collected date/time	Received date/time
Andrew Blake	11/16/17 16:25	11/18/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1045171	2	11/21/17 23:14	11/21/17 23:14	MBF

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Technical Service Representative

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1045184
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1045184
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1045184
2-Propanol	67-63-0	60.10	2.50	6.15	5.36	13.2		2	WG1045184
Tetrachloroethylene	127-18-4	166	0.400	2.72	42.3	287		2	WG1045184
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1045184
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1045184
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*96.0*				WG1045184

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1045184
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1045184
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1045184
2-Propanol	67-63-0	60.10	2.50	6.15	ND	ND		2	WG1045184
Tetrachloroethylene	127-18-4	166	0.400	2.72	16.2	110		2	WG1045184
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1045184
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1045184
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*95.9*				WG1045184

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1045184
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1045184
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1045184
2-Propanol	67-63-0	60.10	2.50	6.15	ND	ND		2	WG1045184
Tetrachloroethylene	127-18-4	166	0.400	2.72	2.70	18.4		2	WG1045184
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1045184
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1045184
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*98.5*				WG1045184

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1045184
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1045184
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1045184
2-Propanol	67-63-0	60.10	2.50	6.15	ND	ND		2	WG1045184
Tetrachloroethylene	127-18-4	166	0.400	2.72	20.6	140		2	WG1045184
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1045184
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1045184
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*97.4*				WG1045184

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1045184
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1045184
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1045184
2-Propanol	67-63-0	60.10	2.50	6.15	ND	ND		2	WG1045184
Tetrachloroethylene	127-18-4	166	0.400	2.72	78.0	529		2	WG1045184
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1045184
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1045184
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*101*				WG1045184

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1045184
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1045184
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1045184
2-Propanol	67-63-0	60.10	125	307	3740	9200		100	WG1045674
Tetrachloroethylene	127-18-4	166	20.0	136	82.2	558		100	WG1045674
Trichloroethylene	79-01-6	131	0.400	2.14	0.415	2.22		2	WG1045184
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1045184
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*94.1*				WG1045674
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*116*				WG1045184

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1045184
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1045184
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1045184
2-Propanol	67-63-0	60.10	2.50	6.15	11.2	27.5		2	WG1045184
Tetrachloroethylene	127-18-4	166	0.400	2.72	7.35	49.9		2	WG1045184
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1045184
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1045184
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*99.5*				WG1045184

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1045171
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1045171
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1045171
2-Propanol	67-63-0	60.10	2.50	6.15	6.10	15.0		2	WG1045171
Tetrachloroethylene	127-18-4	166	0.400	2.72	27.0	183		2	WG1045171
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1045171
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1045171
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*99.0*				WG1045171

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1045171
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1045171
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1045171
2-Propanol	67-63-0	60.10	2.50	6.15	5.50	13.5		2	WG1045171
Tetrachloroethylene	127-18-4	166	0.400	2.72	39.7	270		2	WG1045171
Trichloroethylene	79-01-6	131	0.400	2.14	0.691	3.70		2	WG1045171
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1045171
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*98.7*				WG1045171

Method Blank (MB)

(MB) R3267409-3 11/21/17 09:13

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
1,1-Dichloroethene	U		0.0490	0.200
cis-1,2-Dichloroethene	U		0.0389	0.200
trans-1,2-Dichloroethene	U		0.0464	0.200
2-Propanol	U		0.0882	1.25
Tetrachloroethylene	U		0.0497	0.200
Trichloroethylene	U		0.0545	0.200
Vinyl chloride	U		0.0457	0.200
(S) 1,4-Bromofluorobenzene	*97.6*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3267409-1 11/21/17 07:42 • (LCSD) R3267409-2 11/21/17 08:26

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Vinyl chloride	3.75	3.66	3.61	97.7	96.3	70.0-130			1.44	25
1,1-Dichloroethene	3.75	3.81	3.76	102	100	70.0-130			1.24	25
2-Propanol	3.75	3.85	3.81	103	102	66.0-150			0.872	25
trans-1,2-Dichloroethene	3.75	3.83	3.77	102	100	70.0-130			1.75	25
cis-1,2-Dichloroethene	3.75	3.90	3.82	104	102	70.0-130			2.10	25
Trichloroethylene	3.75	3.89	3.80	104	101	70.0-130			2.54	25
Tetrachloroethylene	3.75	3.99	3.88	106	104	70.0-130			2.61	25
(S) 1,4-Bromofluorobenzene				*98.7*	*101*	*60.0-140*				

Method Blank (MB)

(MB) R3267478-3 11/21/17 08:56

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
1,1-Dichloroethene	U		0.0490	0.200
cis-1,2-Dichloroethene	U		0.0389	0.200
trans-1,2-Dichloroethene	U		0.0464	0.200
2-Propanol	U		0.0882	1.25
Tetrachloroethylene	U		0.0497	0.200
Trichloroethylene	U		0.0545	0.200
Vinyl chloride	U		0.0457	0.200
(S) 1,4-Bromofluorobenzene	*96.6*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3267478-1 11/21/17 07:33 • (LCSD) R3267478-2 11/21/17 08:14

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Vinyl chloride	3.75	3.95	4.03	105	107	70.0-130			1.94	25
1,1-Dichloroethene	3.75	4.09	4.15	109	111	70.0-130			1.61	25
2-Propanol	3.75	4.14	4.18	110	112	66.0-150			1.07	25
trans-1,2-Dichloroethene	3.75	4.10	4.10	109	109	70.0-130			0.0192	25
cis-1,2-Dichloroethene	3.75	4.02	4.02	107	107	70.0-130			0.163	25
Trichloroethylene	3.75	3.99	4.00	106	107	70.0-130			0.294	25
Tetrachloroethylene	3.75	3.93	3.99	105	106	70.0-130			1.32	25
(S) 1,4-Bromofluorobenzene				*99.8*	*99.1*	*60.0-140*				

Method Blank (MB)

(MB) R3267792-3 11/22/17 09:05

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
2-Propanol	0.109	J	0.0882	1.25
Tetrachloroethylene	U		0.0497	0.200
(S) 1,4-Bromofluorobenzene	*92.8*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3267792-1 11/22/17 07:35 • (LCSD) R3267792-2 11/22/17 08:20

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2-Propanol	3.75	3.73	3.75	99.4	99.9	66.0-150			0.503	25
Tetrachloroethylene	3.75	3.74	3.68	99.9	98.1	70.0-130			1.79	25
(S) 1,4-Bromofluorobenzene				*91.7*	*94.7*	*60.0-140*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**

***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1.] Drinking Water [2.] Underground Storage Tanks [3.] Aquatic Toxicity [4.] Chemical/Microbiological [5.] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**

Succeed Environmental Consulting

Billing information:
Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Pres Chk

Report to: **Andrew Blake**

Email To: **ablake@succeed-env.com**

Project Description: —

City/State Collected:

Phone: **971-371-0404**
Fax:

Client Project # NE-1-01

Lab Project # **Sucenvpor**

Collected by (print): **Andrew Blake**

Site/Facility ID # —

P.O. # —

Collected by (signature):

Immediately Packed on Ice N X Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote # —

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Analysis / Container / Preservative: 15-15 AVOCs + IPA	Remarks	Sample # (lab only)
SV-1	—	Air	—	11/16/17	15:30	1	X		-01
SV-2	—		—		15:40	1	X		02
SV-3	—		—		15:45	1	X		03
SV-4	—		—		15:50	1	X		04
SV-5	—		—		15:55	1	X		05
SV-6	—		—		15:58	1	X		06
SV-7	—		—		16:05	1	X		07
SV-8	—		—		16:15	1	X		08
SV-9	—		—		16:25	1	X		09

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
THE LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L952236

Tab M228

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS X FedEx __ Courier __ _____

Tracking # 7305 8951 4228

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
	11/17/17	FED EX			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: AMB °C Bottles Received: 9	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11/18/17 Time: 8:45	Hold: Condition: NCF / OK

ANALYTICAL REPORT

February 14, 2018

Succeed Environmental Consulting

Sample Delivery Group:	L968654
Samples Received:	02/08/2018
Project Number:	HE-1
Description:	

Report To: Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Entire Report Reviewed By: Brian Ford

Brian Ford
Technical Service Representative

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SV-10 L968654-01 Air

Collected by: Andrew Blake | Collected date/time: 02/07/18 11:00 | Received date/time: 02/08/18 12:52

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1071863	2	02/10/18 00:15	02/10/18 00:15	AMC
Volatile Organic Compounds (MS) by Method TO-15	WG1072236	40	02/10/18 13:43	02/10/18 13:43	MBF

IA-1 L968654-02 Air

Collected by: Andrew Blake | Collected date/time: 02/07/18 08:20 | Received date/time: 02/08/18 12:52

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1072243	1	02/10/18 12:02	02/10/18 12:02	MBF

IA-2 L968654-03 Air

Collected by: Andrew Blake | Collected date/time: 02/07/18 08:25 | Received date/time: 02/08/18 12:52

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1072243	1	02/10/18 12:48	02/10/18 12:48	MBF

IA-3 L968654-04 Air

Collected by: Andrew Blake | Collected date/time: 02/07/18 08:30 | Received date/time: 02/08/18 12:52

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1072243	1	02/10/18 13:31	02/10/18 13:31	MBF

BG-1 L968654-05 Air

Collected by: Andrew Blake | Collected date/time: 02/07/18 08:35 | Received date/time: 02/08/18 12:52

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1072243	1	02/10/18 14:17	02/10/18 14:17	MBF

BG-2 L968654-06 Air

Collected by: Andrew Blake | Collected date/time: 02/07/18 08:40 | Received date/time: 02/08/18 12:52

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1072243	1	02/10/18 14:59	02/10/18 14:59	MBF

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Technical Service Representative

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1071863
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1071863
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1071863
2-Propanol	67-63-0	60.10	2.50	6.15	ND	ND		2	WG1071863
Tetrachloroethylene	127-18-4	166	8.00	54.3	263	1780		40	WG1072236
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1071863
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1071863
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*89.9*				WG1072236
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*90.7*				WG1071863

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.0200	0.0793	ND	ND		1	WG1072243
cis-1,2-Dichloroethene	156-59-2	96.90	0.0200	0.0793	ND	ND		1	WG1072243
trans-1,2-Dichloroethene	156-60-5	96.90	0.0200	0.0793	ND	ND		1	WG1072243
Tetrachloroethylene	127-18-4	166	0.0200	0.136	0.224	1.52		1	WG1072243
Trichloroethylene	79-01-6	131	0.0200	0.107	0.108	0.576		1	WG1072243
Vinyl chloride	75-01-4	62.50	0.0200	0.0511	ND	ND		1	WG1072243
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*105*				WG1072243

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.0200	0.0793	ND	ND		1	WG1072243
cis-1,2-Dichloroethene	156-59-2	96.90	0.0200	0.0793	ND	ND		1	WG1072243
trans-1,2-Dichloroethene	156-60-5	96.90	0.0200	0.0793	ND	ND		1	WG1072243
Tetrachloroethylene	127-18-4	166	0.0200	0.136	0.0658	0.447		1	WG1072243
Trichloroethylene	79-01-6	131	0.0200	0.107	0.0756	0.405		1	WG1072243
Vinyl chloride	75-01-4	62.50	0.0200	0.0511	ND	ND		1	WG1072243
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*104*				WG1072243

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.0200	0.0793	ND	ND		1	WG1072243
cis-1,2-Dichloroethene	156-59-2	96.90	0.0200	0.0793	ND	ND		1	WG1072243
trans-1,2-Dichloroethene	156-60-5	96.90	0.0200	0.0793	ND	ND		1	WG1072243
Tetrachloroethylene	127-18-4	166	0.0200	0.136	ND	ND		1	WG1072243
Trichloroethylene	79-01-6	131	0.0200	0.107	0.0301	0.161		1	WG1072243
Vinyl chloride	75-01-4	62.50	0.0200	0.0511	ND	ND		1	WG1072243
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*102*				WG1072243

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.0200	0.0793	ND	ND		1	WG1072243
cis-1,2-Dichloroethene	156-59-2	96.90	0.0200	0.0793	ND	ND		1	WG1072243
trans-1,2-Dichloroethene	156-60-5	96.90	0.0200	0.0793	ND	ND		1	WG1072243
Tetrachloroethylene	127-18-4	166	0.0200	0.136	ND	ND		1	WG1072243
Trichloroethylene	79-01-6	131	0.0200	0.107	ND	ND		1	WG1072243
Vinyl chloride	75-01-4	62.50	0.0200	0.0511	ND	ND		1	WG1072243
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*97.5*				WG1072243

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.0200	0.0793	ND	ND		1	WG1072243
cis-1,2-Dichloroethene	156-59-2	96.90	0.0200	0.0793	ND	ND		1	WG1072243
trans-1,2-Dichloroethene	156-60-5	96.90	0.0200	0.0793	ND	ND		1	WG1072243
Tetrachloroethylene	127-18-4	166	0.0200	0.136	ND	ND		1	WG1072243
Trichloroethylene	79-01-6	131	0.0200	0.107	ND	ND		1	WG1072243
Vinyl chloride	75-01-4	62.50	0.0200	0.0511	ND	ND		1	WG1072243
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*99.8*				WG1072243

Method Blank (MB)

(MB) R3285402-3 02/09/18 10:35

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
1,1-Dichloroethene	U		0.0490	0.200
cis-1,2-Dichloroethene	U		0.0389	0.200
trans-1,2-Dichloroethene	U		0.0464	0.200
2-Propanol	U		0.0882	1.25
Trichloroethylene	U		0.0545	0.200
Vinyl chloride	U		0.0457	0.200
(S) 1,4-Bromofluorobenzene	*90.3*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3285402-1 02/09/18 08:57 • (LCSD) R3285402-2 02/09/18 09:45

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Vinyl chloride	3.75	4.22	4.19	113	112	70.0-130			0.702	25
1,1-Dichloroethene	3.75	4.03	4.09	107	109	70.0-130			1.39	25
2-Propanol	3.75	3.89	3.95	104	105	66.0-150			1.72	25
trans-1,2-Dichloroethene	3.75	4.31	4.37	115	117	70.0-130			1.55	25
cis-1,2-Dichloroethene	3.75	4.24	4.27	113	114	70.0-130			0.786	25
Trichloroethylene	3.75	4.26	4.37	114	116	70.0-130			2.42	25
(S) 1,4-Bromofluorobenzene				*98.0*	*98.3*	*60.0-140*				

Method Blank (MB)

(MB) R3285565-2 02/10/18 10:45

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Tetrachloroethylene	U		0.0497	0.200
(S) 1,4-Bromofluorobenzene	*90.0*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3285565-1 02/10/18 10:00 • (LCSD) R3285565-3 02/10/18 11:30

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Tetrachloroethylene	3.75	4.75	4.88	127	130	70.0-130			2.75	25
(S) 1,4-Bromofluorobenzene				*93.2*	*93.9*	*60.0-140*				

Method Blank (MB)

(MB) R3285570-3 02/10/18 10:36

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
1,1-Dichloroethene	U		0.00521	0.0200
cis-1,2-Dichloroethene	U		0.00770	0.0200
trans-1,2-Dichloroethene	U		0.00499	0.0200
Tetrachloroethylene	U		0.00457	0.0200
Trichloroethylene	U		0.00736	0.0200
Vinyl chloride	U		0.00765	0.0200
(S) 1,4-Bromofluorobenzene	*99.4*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3285570-1 02/10/18 09:13 • (LCSD) R3285570-2 02/10/18 09:55

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,1-Dichloroethene	0.500	0.523	0.517	105	103	70.0-130			1.13	25
cis-1,2-Dichloroethene	0.500	0.513	0.517	103	103	70.0-130			0.641	25
trans-1,2-Dichloroethene	0.500	0.518	0.514	104	103	70.0-130			0.892	25
Tetrachloroethylene	0.500	0.504	0.517	101	103	70.0-130			2.72	25
Trichloroethylene	0.500	0.504	0.508	101	102	70.0-130			0.789	25
Vinyl chloride	0.500	0.516	0.489	103	97.8	70.0-130			5.30	25
(S) 1,4-Bromofluorobenzene				*100*	*101*	*60.0-140*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.

Company Name/Address:	Billing Information:	Analysis
Succor Environmental Consulting LLC 6028 NE 49th Avenue Portland, OR 97218	same	RE, TCE, DCE, VC by TO-15 SIM
Report to: Andrew Blake	Email To: ablake@succorenv.com	
Project Description: —	City/State Collected: Tacoma, WA	
Phone: 971-371-0404 Fax: —	Client Project # HE-1	Lab Project #
Collected by (print): Andrew Blake	Site/Facility ID #	P.O. # —
Collected by (signature):	**Rush?** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed 2/15/14 Email? ___No ___Yes FAX? ___No ___Yes Canister Pressure/Vacuum

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
a subsidiary of Pace Analytical

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 968654
Ta M063
Acctnum: SUCENVPOR
Template: T132040
Prelogin: P634455
TSR: Brandi Ford
PB: BF 1/24/18
Shipped Via: Ground

Sample ID	Sample Description	Can #	Date	Time	Initial	Final	Rem./Contaminant	Sample # (lab only)
SV-10	—	10468	2/7/18	11:00	-30	-1		-01
IA-1	—	15490		8:20	-30	-6		-02
IA-2	—	15740		8:25	-30	-8		-03
IA-3	—	19756		8:30	-30	-4		-04
BG-1	—	19724		8:35	-30	-9		-05
BG-2	—	8145		8:40	-30	-6		-06

Remarks: 419b 3261 9999

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ____	Condition: (lab use only)
	2/7/18	FED EX			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: AMB °C Bottles Received: 6	COC Seal Intact: ___Y ___N ___NA /
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2/8/18 Time: 845	pH Checked: NCF:

ESC LAB SCIENCES
Cooler Receipt Form

Client: SUCENVPOR	SDG#		
Cooler Received/Opened On: 02/ 8 /18	Temperature:	AMB	°C
Received by : Christian Kacar			
Signature:			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

ANALYTICAL REPORT

May 24, 2018

Succeed Environmental Consulting

Sample Delivery Group:	L994605
Samples Received:	05/17/2018
Project Number:	HE-1-01
Description:	

Report To: Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Entire Report Reviewed By: Brian Ford

Brian Ford
Technical Service Representative

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IA-1 L994605-01 Air

Collected by: Andrew Blake
Collected date/time: 05/16/18 08:55
Received date/time: 05/17/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1115154	1	05/24/18 03:09	05/24/18 03:09	MBF

BG-1 L994605-02 Air

Collected by: Andrew Blake
Collected date/time: 05/16/18 09:00
Received date/time: 05/17/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1115154	1	05/24/18 04:04	05/24/18 04:04	MBF

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Technical Service Representative

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.0200	0.0793	ND	ND		1	WG1115154
cis-1,2-Dichloroethene	156-59-2	96.90	0.0200	0.0793	ND	ND		1	WG1115154
trans-1,2-Dichloroethene	156-60-5	96.90	0.0200	0.0793	ND	ND		1	WG1115154
Tetrachloroethylene	127-18-4	166	0.0200	0.136	0.747	5.07		1	WG1115154
Trichloroethylene	79-01-6	131	0.0200	0.107	ND	ND		1	WG1115154
Vinyl chloride	75-01-4	62.50	0.0200	0.0511	ND	ND		1	WG1115154
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*105*				WG1115154

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.0200	0.0793	ND	ND		1	WG1115154
cis-1,2-Dichloroethene	156-59-2	96.90	0.0200	0.0793	ND	ND		1	WG1115154
trans-1,2-Dichloroethene	156-60-5	96.90	0.0200	0.0793	ND	ND		1	WG1115154
Tetrachloroethylene	127-18-4	166	0.0200	0.136	0.455	3.09		1	WG1115154
Trichloroethylene	79-01-6	131	0.0200	0.107	ND	ND		1	WG1115154
Vinyl chloride	75-01-4	62.50	0.0200	0.0511	ND	ND		1	WG1115154
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*98.8*				WG1115154

Method Blank (MB)

(MB) R3312651-3 05/24/18 02:25

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
1,1-Dichloroethene	U		0.00521	0.0200
cis-1,2-Dichloroethene	U		0.00770	0.0200
trans-1,2-Dichloroethene	U		0.00499	0.0200
Tetrachloroethylene	U		0.00457	0.0200
Trichloroethylene	U		0.00736	0.0200
Vinyl chloride	U		0.00765	0.0200
(S) 1,4-Bromofluorobenzene	*98.5*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3312651-1 05/24/18 01:02 • (LCSD) R3312651-2 05/24/18 01:44

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,1-Dichloroethene	0.500	0.500	0.506	100	101	70.0-130			1.22	25
cis-1,2-Dichloroethene	0.500	0.501	0.503	100	101	70.0-130			0.464	25
trans-1,2-Dichloroethene	0.500	0.498	0.504	99.6	101	70.0-130			1.20	25
Tetrachloroethylene	0.500	0.493	0.492	98.7	98.5	70.0-130			0.221	25
Trichloroethylene	0.500	0.505	0.508	101	102	70.0-130			0.591	25
Vinyl chloride	0.500	0.510	0.518	102	104	70.0-130			1.65	25
(S) 1,4-Bromofluorobenzene				*99.7*	*99.2*	*60.0-140*				

Guide to Reading and Understanding Your Laboratory Report

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Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
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Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.

Succeed Environmental Consulting

6028 NE 49th Avenue
Portland, OR 97218

Billing Information:
Andrew Blake
6028 NE 49th Ave.
Portland, OR 97218

Report to: Andrew Blake

Email To: ablake@succeed-env.com

Project Description: —

City/State Collected: Tacoma, WA

Phone: 971-371-0404
Fax:

Client Project # HE-1-01

Lab Project # SUCENVPOR-HE101

Collected by (print): Andrew Blake

Site/Facility ID # —

P.O. # —

Collected by (signature):

Immediately Packed on Ice N X Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote # HE-1

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No of Cntrs	Pres Chk	TO-15SIM Summa RE, TCE, DCE's, VC's	Analysis / Container / Preservative	Remarks	Sample # (lab only)
IA-1	—	Air	—	5/16/18	8:55	1		X			01
BG-1	—	Air	—	5/16/18	9:00	1		X			02

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
a subsidiary of Pace Analytical

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 994605

Tab M116

Acctnum: SUCENVPOR

Template: T135903

Prelogin: P652739

TSR: 110 - Brian Ford

PB: TB 5-7-18

Shipped Via: FedEX Ground

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS X FedEx __ Courier __ _____

Tracking # 4361 6935 4359

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
	5/16/18	FEDEX			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:	If preservation required by Login: Date/Time
				2	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date:	Time:
				5/17/18	830

Hold: Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 13, 2018

Succeed Environmental Consulting

Sample Delivery Group:	L1015524
Samples Received:	08/08/2018
Project Number:	HE-1-01
Description:	

Report To:

Andrew Blake
6028 NE 49th Avenue
Portland, OR 97218

Entire Report Reviewed By: Brian Ford

Brian Ford
Project Manager

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IA-2 L1015524-01 Air

Collected by	Collected date/time	Received date/time
Andrew Blake	08/07/18 08:50	08/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1150389	1	08/10/18 22:10	08/10/18 22:10	AMC

BG-2 L1015524-02 Air

Collected by	Collected date/time	Received date/time
Andrew Blake	08/07/18 08:55	08/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1150389	1	08/10/18 23:10	08/10/18 23:10	AMC

SV-10 L1015524-03 Air

Collected by	Collected date/time	Received date/time
Andrew Blake	08/07/18 11:30	08/08/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1149924	2	08/09/18 18:35	08/09/18 18:35	AMC
Volatile Organic Compounds (MS) by Method TO-15	WG1150389	2	08/10/18 23:50	08/10/18 23:50	AMC
Volatile Organic Compounds (MS) by Method TO-15	WG1150727	25	08/11/18 08:52	08/11/18 08:52	AMC

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Project Manager

Project Narrative

L1015524-03, SV-10: Canister was not certified clean for 2-propanol. Canister was certified for TO-15SIM compounds only.

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.0200	0.0793	ND	ND		1	WG1150389
cis-1,2-Dichloroethene	156-59-2	96.90	0.0200	0.0793	ND	ND		1	WG1150389
trans-1,2-Dichloroethene	156-60-5	96.90	0.0200	0.0793	ND	ND		1	WG1150389
Tetrachloroethylene	127-18-4	166	0.0200	0.136	0.0529	0.359		1	WG1150389
Trichloroethylene	79-01-6	131	0.0200	0.107	ND	ND		1	WG1150389
Vinyl chloride	75-01-4	62.50	0.0200	0.0511	ND	ND		1	WG1150389
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*97.0*				WG1150389

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.0200	0.0793	ND	ND		1	WG1150389
cis-1,2-Dichloroethene	156-59-2	96.90	0.0200	0.0793	ND	ND		1	WG1150389
trans-1,2-Dichloroethene	156-60-5	96.90	0.0200	0.0793	ND	ND		1	WG1150389
Tetrachloroethylene	127-18-4	166	0.0200	0.136	0.0350	0.238		1	WG1150389
Trichloroethylene	79-01-6	131	0.0200	0.107	ND	ND		1	WG1150389
Vinyl chloride	75-01-4	62.50	0.0200	0.0511	ND	ND		1	WG1150389
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*95.1*				WG1150389

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.0400	0.159	ND	ND		2	WG1150389
cis-1,2-Dichloroethene	156-59-2	96.90	0.0400	0.159	ND	ND		2	WG1150389
trans-1,2-Dichloroethene	156-60-5	96.90	0.0400	0.159	ND	ND		2	WG1150389
Tetrachloroethylene	127-18-4	166	0.500	3.39	70.6	480		25	WG1150727
2-Propanol	67-63-0	60.10	2.50	6.15	ND	ND		2	WG1149924
Trichloroethylene	79-01-6	131	0.0400	0.214	ND	ND		2	WG1150389
Vinyl chloride	75-01-4	62.50	0.0400	0.102	ND	ND		2	WG1150389
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*94.6*				WG1150389
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*94.0*				WG1150727
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*94.5*				WG1149924

Method Blank (MB)

(MB) R3332269-3 08/09/18 10:11

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
2-Propanol	U		0.0882	1.25
(S) 1,4-Bromofluorobenzene	*92.6*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3332269-1 08/09/18 08:42 • (LCSD) R3332269-2 08/09/18 09:26

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2-Propanol	3.75	3.73	3.58	99.5	95.5	66.0-150			4.06	25
(S) 1,4-Bromofluorobenzene				*101*	*102*	*60.0-140*				

Method Blank (MB)

(MB) R3332808-3 08/10/18 10:01

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
1,1-Dichloroethene	U		0.00521	0.0200
cis-1,2-Dichloroethene	U		0.00770	0.0200
trans-1,2-Dichloroethene	U		0.00499	0.0200
Tetrachloroethylene	U		0.00457	0.0200
Trichloroethylene	U		0.00736	0.0200
Vinyl chloride	U		0.00765	0.0200
(S) 1,4-Bromofluorobenzene	*93.0*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3332808-1 08/10/18 08:34 • (LCSD) R3332808-2 08/10/18 09:18

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,1-Dichloroethene	0.500	0.437	0.436	87.4	87.1	70.0-130			0.333	25
cis-1,2-Dichloroethene	0.500	0.468	0.466	93.5	93.3	70.0-130			0.261	25
trans-1,2-Dichloroethene	0.500	0.427	0.428	85.3	85.5	70.0-130			0.244	25
Tetrachloroethylene	0.500	0.511	0.514	102	103	70.0-130			0.527	25
Trichloroethylene	0.500	0.461	0.465	92.3	93.0	70.0-130			0.817	25
Vinyl chloride	0.500	0.442	0.443	88.3	88.5	70.0-130			0.222	25
(S) 1,4-Bromofluorobenzene				*95.8*	*94.8*	*60.0-140*				

Method Blank (MB)

(MB) R3332809-3 08/11/18 05:47

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Tetrachloroethylene	U		0.00457	0.0200
(S) 1,4-Bromofluorobenzene	*93.7*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3332809-1 08/11/18 04:18 • (LCSD) R3332809-2 08/11/18 05:04

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Tetrachloroethylene	0.500	0.511	0.519	102	104	70.0-130			1.67	25
(S) 1,4-Bromofluorobenzene				*94.0*	*94.7*	*60.0-140*				

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Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

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State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

Succee(Environmental Consulting

6028 NE 4[illegible]th Avenue
Portland, [illegible]R 97218

Billing Information:
Andrew Blake
6028 NE 49th Ave.
Portland, OR 97218

Report to: Andrew Blake

Email To: ablake@succeed-env.com

Project Description: —

City/State Collected: Tacoma, WA

Phone: 971-371-0404
Fax:

Client Project # HE-1-01

Lab Project # SUCENVPOR-HE101

Collected by (print): Andrew Blake

Site/Facility ID #

P.O. # —

Collected by (signature):

Immediately Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote # HE-1

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TO-15SIM Summa (Analyze only RE,TCE,DCE,VC + 2 Propanol)	Remarks	Sample # (lab only)
IA-2	—	Air	—	8/7/18	8:50		X		01
BG-2	—	Air	—	↓	8:55		X		02
SV-10	—	Air	—	↓	11:30		X		03

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1015524

Table # M157

Acctnum: SUCENVPOR

Template: T138884

Prelogin: P664497

TSR: 110 - Brian Ford

PB: BF 7/27/18

Shipped Via: FedEX Ground

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: 11-DCE, cis-12-DCE, trans-12-DCE, PCE, TCE, VC only.

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS X FedEx __ Courier __ _____

Tracking # 451016529302

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	8/7/18	FEDEX	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: °C Bottles Received: 3

Date: 8/8/18 Time: 0845

If preservation required by Login: Date/Time

Hold:

Condition: NCF OK

ESN NORTHWEST
Environmental
Services Network

December 23, 2015

Becky Dilba
Associated Environmental Group, Inc.
605 11th Ave. SE, Suite 201
Olympia, WA 98501

Dear Ms. Dilba:

Please find enclosed the analytical data report for the Adams Street Building Project in Tacoma, Washington. Probe services were conducted on December 9, 2015. Soil vapor samples were analyzed for Chlorinated VOC's by Method 8260 on December 11, 2015.

The results of the analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Associated Environmental Group, Inc. for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

1210 Eastside Street SE, Suite 200 ■ Olympia, Washington 98501 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
PROJECT ADAMS ST BUILDING
PROJECT #15-171
Tacoma, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analyses of Volatile Organic Componds in Air by Method 8260

Sample ID	Molecular	Reporting	MB	LCS	LCSD	B1	B2	B3	B4
Date Sampled	Weight	Limits				12/09/15	12/09/15	12/09/15	12/09/15
Date Analyzed	g	ug/m3	12/11/15	12/11/15	12/11/15	12/11/15	12/11/15	12/11/15	12/11/15
Dichlorodifluoromethane	120.9	10	nd			nd	nd	nd	nd
Chloromethane	50.49	50	nd			nd	nd	nd	nd
Vinyl chloride	62.50	10	nd	102%	94%	nd	nd	nd	nd
Chloroethane	64.52	10	nd			nd	nd	nd	nd
Trichlorofluoromethane	137.4	10	nd			nd	nd	nd	nd
1,1-Dichloroethene	96.95	10	nd			nd	nd	nd	nd
Methylene chloride	84.93	100	nd			nd	nd	nd	nd
trans-1,2-Dichloroethene	96.95	10	nd			nd	nd	nd	nd
1,1-Dichloroethane	98.96	10	nd			nd	nd	nd	nd
cis-1,2-Dichloroethene	96.95	10	nd			nd	nd	nd	nd
2,2-Dichloropropane	113.0	10	nd			nd	nd	nd	nd
Chloroform	119.4	10	nd	120%	113%	nd	nd	nd	nd
Bromochloromethane	129.4	10	nd			nd	nd	nd	nd
1,1,1-Trichloroethane	133.4	10	nd			nd	nd	nd	nd
1,2-Dichloroethane (EDC)	98.96	10	nd			nd	nd	nd	nd
1,1-Dichloropropene	111.0	10	nd			nd	nd	nd	nd
Carbon tetrachloride	153.2	10	nd			nd	nd	nd	nd
Trichloroethene	131.4	10	nd	115%	105%	nd	nd	nd	nd
1,2-Dichloropropane	113.0	10	nd	118%	110%	nd	nd	nd	nd
Bromodichloromethane	163.8	10	nd			nd	nd	nd	nd
cis-1,3-Dichloropropene	111.0	10	nd			nd	nd	nd	nd
trans-1,3-Dichloropropene	111.0	10	nd			nd	nd	nd	nd
1,1,2-Trichloroethane	133.4	10	nd			nd	nd	nd	nd
1,3-Dichloropropane	113.0	10	nd			nd	nd	nd	nd
Dibromochloromethane	208.3	10	nd			nd	nd	nd	nd
Tetrachloroethene	165.8	10	nd	99%	90%	**340**	**1,200**	**570**	nd
Chlorobenzene	112.6	10	nd	109%	100%	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	167.9	10	nd			nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	167.9	10	nd			nd	nd	nd	nd
1,2,3-Trichloropropane	147.4	10	nd			nd	nd	nd	nd
1,3-Dichlorobenzene	147.0	10	nd			nd	nd	nd	nd
1,4-Dichlorobenzene	147.0	10	nd			nd	nd	nd	nd
1,2-Dichlorobenzene	147.0	10	nd			nd	nd	nd	nd
1,2,4-Trichlorobenzene	181.5	75	nd			nd	nd	nd	nd
Hexachloro-1,3-butadiene	260.8	100	nd			nd	nd	nd	nd
Surrogate recoveries									
Dibromofluoromethane			105%	102%	101%	94%	105%	104%	103%
Toluene-d8			103%	95%	93%	103%	102%	104%	104%
4-Bromofluorobenzene			104%	92%	93%	103%	103%	101%	102%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: AES
ADDRESS: 605 11th Ave SE Suite 201
PHONE: (360) 352-9835 FAX: —
CLIENT PROJECT #: 15171 PROJECT MANAGER: B. Dilks

DATE: 12/9/15 PAGE 1 OF 1
PROJECT NAME: Adams St Buildings
LOCATION: 6707 S. Adams St. Tacoma
COLLECTOR: B. Dilks DATE OF COLLECTION: 12/9/15

Sample Number	Depth	Time	Sample Type	Container Type	TPH - HCID	TPH - Diesel & Oil	TPH - Gasoline	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos - PLM	GRO Suite	DRO Suite	WO Suite	NOTES	Total Number of Containers	Laboratory Note Number
1. B1	—	0915	Water	Tedlar				X																
2. B2	—	0935						X																
3. B3	—	0954						X																
4. B4	—	1007						X																
5.																								
6.																								
7.																								
8.																								
9.																								
10.																								
11.																								
12.																								
13.																								
14.																								
15.																								
16.																								
17.																								
18.																								

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	12/9/15	[signature]	12/9/15
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

1210 Eastside Street SE, Suite 200
Olympia, Washington 98501
Phone: 360-459-4670
Fax: 360-459-3432
Website: www.esnnw.com
E-Mail: info@esnnw.com

APPENDIX C

SUPPORTING INFORMATION

Model Input **Site Name/Run Number:** Example, Run 1

Note:
-Yellow highlighted cells indicate parameters that typically are changed or must be inputted by the user.
-Dotted outline cells indicate default values that may be changed with justification.
-Toxicity values are taken from Regional Screening Level tables. These tables are updated semi-annually and may not reflect the most current toxicity information.

Use English / Metric Converter

Source Characteristics:	Units	Symbol	Value	Default	Potential Span	CV	Flag	Comment
Source medium		Source	Sub-slab Soil Gas					
Soil gas concentration	(ug/m3)	Cmedium	1780		NA			
Depth below grade to soil gas sample	(m)	Ls	0.15		Vary - 50	NA		
Average vadose zone temperature	(°C)	Ts	25	25	3-30			
Calc: Source vapor concentration	(ug/m3)	Cs	1780					
Calc: % of pure component saturated vapor concentration	(%)	%Sat	0.001%					

Chemical:	Units	Symbol	Value	Default	Potential Span	CV	Flag	Comment
Chemical Name		Chem	Tetrachloroethylene					
CAS No.		CAS	127-18-4					
Toxicity Factors								
Unit risk factor	$(ug/m^3)^{-1}$	IUR	2.60E-07	2.60E-07	NA	NA		
Mutagenic compound		Mut	No	NA	NA	NA		
Reference concentration	(mg/m^3)	RfC	4.00E-02	4.00E-02	NA	NA		

Chemical Properties:	Units	Symbol	Value	Default	Potential Span	CV	Flag	Comment
Pure component water solubility	(mg/L)	S	2.06E+02	2.06E+02	NA	NA		
Henry's Law Constant @ 25°C	$(atm\text{-}m^3/mol)$	Hc	1.77E-02	1.77E-02	NA	NA		
Calc: Henry's Law Constant @ 25°C	(dimensionless)	Hr	7.24E-01	7.24E-01				
Calc: Henry's Law Constant @ system temperature	(dimensionless)	Hs	7.24E-01	7.24E-01				
Diffusivity in air	(cm2/s)	Dair	5.05E-02	5.05E-02	NA	NA		
Diffusivity in water	(cm2/s)	Dwater	9.46E-06	9.46E-06	NA	NA		

Building Characteristics:

Select Building Assumptions
- (●) Use ratio for Qsoil/Qbuilding (recommended if no site specific data available)
- ( ) Specify Qsoil and Qbuilding separately; calculate ratio

	Units	Symbol	Value	Default	Potential Span	CV	Flag	Comment
Building setting		Bldg_Setting	Residential	Residential				
Foundation type		Found_Type	Slab-on-grade	Slab-on-grade				

Depth below grade to base of foundation	(m)	Lb	0.10	0.10	0.1 - 2.44	NA	
Foundation thickness	(m)	Lf	0.10	0.10	0.1 - 0.25	NA	
Fraction of foundation area with cracks	(-)	eta	0.001	0.001	0.00019-0.0019	1.00	
Enclosed space floor area	(m2)	Abf	150.00	150.00	80 - 200	NA	
Enclosed space mixing height	(m)	Hb	2.44	2.44	2.13 - 3.05	NA	
Indoor air exchange rate	(1 / hr)	ach	0.45	0.45	.15-1.26	NA	
Qsoil/Qbuilding	(-)	Qsoil_Qb	0.0030	0.0030	0.0001 - 0.05	1.24	
Calc: Building ventilation rate	(m3/hr)	Qb	164.70	164.70	NA	0.30	
Calc: Average vapor flow rate into building	(m3/hr)	Qsoil	0.49	0.49	NA	NA	

Model Input **Site Name/Run Number:** Example, Run 1

Chemical Name: Tetrachloroethylene **CAS No. 127-18-4**

Depth below grade to soil gas sample: 0.15 meters

Vadose zone characteristics:	Units	Symbol	Value	Default	Potential Span	CV	Flag	Comment
Stratum A (Top of soil profile):								
Stratum A SCS soil type		SCS_A	Sand					
Stratum A thickness (from surface)	(m)	hSA	0.15					
Stratum A total porosity	(-)	nSA	0.375	0.375	NA	0.20		
Stratum A water-filled porosity	(-)	nwSA	0.054	0.054	0.053 - 0.055	0.25		
Stratum A bulk density	(g/cm^3)	rhoSA	1.660	1.660	NA	0.05		
Stratum B (Soil layer below Stratum A):								
Stratum B SCS soil type		SCS_B	Not Present					
Stratum B thickness	(m)	hSB	0.00					
Stratum B total porosity	(-)	nSB			NA	NA		
Stratum B water-filled porosity	(-)	nwSB			NA	NA		
Stratum B bulk density	(g/cm^3)	rhoSB			NA	NA		
Stratum C (Soil layer below Stratum B):								
Stratum C SCS soil type		SCS_C	Not Present					
Stratum C thickness	(m)	hSC	0.00					
Stratum C total porosity	(-)	nSC			NA	NA		
Stratum C water-filled porosity	(-)	nwSC			NA	NA		
Stratum C bulk density	(g/cm^3)	rhoSC			NA	NA		
Stratum containing soil gas sample								
Stratum A, B, or C		src_soil	Stratum A					
					NA	NA		
					NA			
					NA			

Exposure Parameters:	Units	Symbol	Value	Default	Potential Span	CV	Flag	Comment
Target risk for carcinogens	(-)	Target_CR	1.00E-06	1.00E-06	NA	NA		
Target hazard quotient for non-carcinogens	(-)	Target_HQ	1	1	NA	NA		
Exposure Scenario		Scenario	Residential	Residential				
Averaging time for carcinogens	(yrs)	ATc	70	70	NA	NA		
Averaging time for non-carcinogens	(yrs)	ATnc	26	26	NA	NA		
Exposure duration	(yrs)	ED	26	26	NA	NA		
Exposure frequency	(days/yr)	EF	350	350	NA	NA		
Exposure time	(hrs/24 hrs)	ET	24	24	NA	NA		
Mutagenic mode-of-action factor	(yrs)	MMOAF	72	72	NA	NA	NOTE	MMOAF not relevant for non-mutagenic

Model Output **Site Name/Run Number:** Example, Run 1

Chemical Name: Tetrachloroethylene **CAS No. 127-18-4**

Range is based on the reasonable range of Qsoil/Qbuilding values, as reported in the literature.

Source to Indoor Air Attenuation Factor	Units	Symbol	Value	Range	Default	Default Range	Flag
Soil gas to indoor air attenuation coefficient	**(-)**	**alpha**	**3.0E-03**	1.0E-04 - 5.0E-02	**3.0E-03**	1.0E-04 - 5.0E-02	
Predicted Indoor Air Concentration	**Units**	**Symbol**	**Value**	**Range**	**Default**	**Default Range**	**Flag**
Indoor air concentration due to vapor intrusion	(ug/m3)	**Cia**	**5.3E+00**	1.8E-01 - 8.9E+01	**5.3E+00**	1.8E-01 - 8.9E+01	
	(ppbv)		**7.9E-01**	2.6E-02 - 1.3E+01	**7.9E-01**	2.6E-02 - 1.3E+01	
Predicted Vapor Conc. Beneath Foundation	**Units**	**Symbol**	**Value**	**Range**	**Default**	**Default Range**	**Flag**
Subslab vapor concentration	(ug/m3)	**Css**	**1.8E+03**	1.8E+03 - 1.8E+03	**1.8E+03**	1.8E+03 - 8.9E+05	
	(ppbv)		**2.6E+02**	2.6E+02 - 2.6E+02	**2.6E+02**	2.6E+02 - 1.3E+05	
Diffusive Transport Upward Through Vadose Zone	**Units**	**Symbol**	**Value**	**Range**	**Default**	**Default Range**	**Flag**
Effective diffusion coefficient through Stratum A	(cm2/sec)	DeffA	8.2E-03	-	8.2E-03	-	
Effective diffusion coefficient through Stratum B	(cm2/sec)	DeffB		-		-	
Effective diffusion coefficient through Stratum C	(cm2/sec)	DeffC		-		-	
				-		-	
Effective diffusion coefficient through unsaturated zone	(cm2/sec)	DeffT	8.2E-03	-	8.2E-03	-	
Critical Parameters		**Symbol**	**Value**	**Range**	**Default**	**Default Range**	**Flag**
α for diffusive transport from source to building with dirt floor foundation	(-)	A_Param	5.5E-02	-	5.5E-02		
Pe (Peclet Number) for transport through the foundation (advection / diffusion)	(-)	B_Param	1.1E+02	3.6E+00 - 1.8E+03	1.1E+02	3.6E+00 - 1.8E+03	
α for convective transport from subslab to building	(-)	C_Param	3.0E-03	1.0E-04 - 5.0E-02	3.0E-03	1.0E-04 - 5.0E-02	

Interpretation

Advection is the dominant mechanism across the foundation.
Advection through the foundation is the overall rate-limiting process.

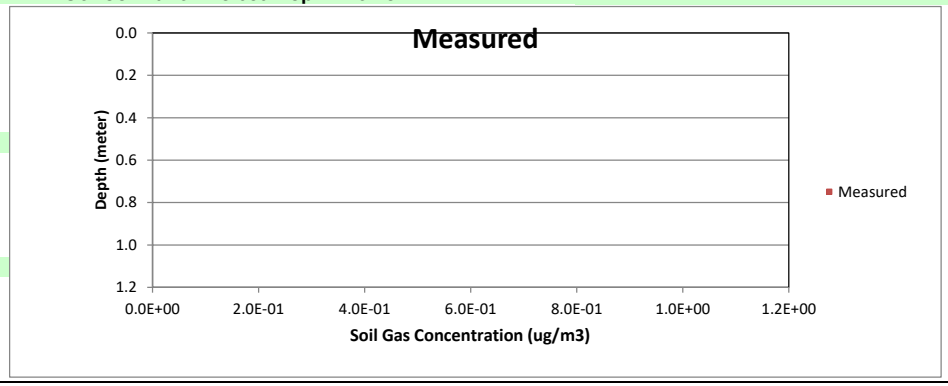
Critical Parameters

Qsoil_Qb

Non-Critical Parameters

Lf, DeffA, DeffT, eta, Ls, ach

Concentration versus Depth Profile



Model Output **Site Name/Run Number:** Example, Run 1

Chemical Name: Tetrachloroethylene **CAS No. 127-18-4**

Risk Calculations	Units	Symbol	Value	Range	Default	Range	Flag
Risk-Based Target Screening Levels	**Scenario: Residential**						
Target risk for carcinogens	(-)	Target_CR	1E-06	-	1E-06	-	
Target hazard quotient for noncarcinogens	(-)	Target_HQ	1	-	1	-	
Target indoor air concentration	**(ug/m3)**	**Target_IA**	**1.08E+01**	-	**1.08E+01**	-	Target indoor air concentration based o
	(ppbv)		**1.59E+00**	-	**1.59E+00**	-	
Target soil gas concentration	**(ug/m3)**	**Target_SV**	**3.60E+03**	**2.2E+02 - 1.1E+05**	**3.60E+03**	**2.2E+02 - 1.1E+05**	
Incremental Risk Estimates							
Incremental cancer risk from vapor intrusion	**(-)**	**Cancer_Risk**	**4.94E-07**	**1.6E-08 - 8.2E-06**	**4.94E-07**	**1.6E-08 - 8.2E-06**	
Hazard quotient from vapor intrusion	**(-)**	**HQ**	**1.28E-01**	**4.3E-03 - 2.1E+00**	**1.28E-01**	**4.3E-03 - 2.1E+00**	