SVE Installation Report
Cascade Plaza
Everett, Washington

Prepared for:
Regency Centers LP

May 25, 2023
REGEN-611

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1.0 Introduction

This report documents the construction and initial operation of a soil vapor extraction (SVE) system at Cascade Plaza located at 7601 Evergreen Way in Everett, Washington (the Site; Figure 1). Project work includes remediation of the former Classic Cleaners located within Tenant Space B004 (currently Domino's Pizza) shown on Figure 2. The objectives of the cleanup action are to reduce the risk to human health and the environment from the chlorinated solvents released at the Site.

This work is being conducted under the oversight of the Washington Department of Ecology (Ecology) within the Voluntary Cleanup Program (VCP). The Cascade Plaza Feasibility Study/Cleanup Action Plan (FS/CAP) was prepared by Apex in 2019 and was approved by Ecology on July 15, 2020. The Facility Site Identification Number is 1382746 and the VCP number is NW 2745.

An SVE work plan (the Work Plan) was prepared for the Site (Apex, 2021) and approved by Ecology. The cleanup action includes construction and operation of an SVE system with vapor controls. The SVE system will operate until cleanup levels are achieved or until another scenario where system shutdown is justified. This report presents the results of the SVE construction and documentation of the initial operation of the SVE system.

2.0 Site Background

This section presents a description of the Site, its geology and hydrogeology, and previous environmental assessment work completed at the Site.

2.1 Site Location and Description

The Site is located at Cascade Plaza, which is a single-story shopping center constructed on two parcels, totaling approximately 19.26 acres within the City of Everett, Washington. The two parcels that comprise Cascade Plaza were historically woodland that was first developed in the 1940s as residential properties and then in the 1950s redeveloped as a drive-in movie theater. The current shopping mall was constructed in the 1980s. The entirety of Cascade Plaza is covered with five retail/office buildings, a retail gas station, cement and asphalt surfaces, and small landscaped areas. The five buildings have historically housed various retail stores, offices, restaurants, an automobile rental agency, and a dry-cleaning facility. Classic Cleaners operated in unit B004 from the early 1980s through 1999. Unit B004 is currently occupied by a Domino's Pizza franchise, and the current layout of unit B004 is shown on Figure 2. The Site is developed for commercial use, and residential development is present east of the Site. There are no dry-cleaning activities currently conducted on the Site.

2.2 Site Geology/Hydrogeology

2.2.1 Site Geology

The Site is in the Puget Lowland physiographic province of Washington State. The Puget Lowland is a broad, low-lying trough located between the Cascade Range to the east, the Olympic Mountains to the northwest, and the Willapa Hills to the southwest. The landscape largely results from repeated cycles of glacial scour and deposition. The Site is located within an area that has been geologically mapped as Vashon Till, which is characterized as a non-sorted, non-stratified mixture of clay, silt, sand, gravel, and cobble up to boulder-size (Yount et al, 1993).

Based on subsurface investigations completed to date, the Site is generally underlain by silty sand, gravel, and gravelly silty sand. Surficial coarse sand and gravel (apparent engineered fill) have been encountered to depths of approximately 2 feet beneath the concrete slab of the building. Relatively shallow refusal in dense soil has been encountered in select borings beneath the building slab at depths ranging from 3 to 7 feet below ground surface (bgs; Apex, 2021).

2.2.2 Site Hydrogeology

Based on historical water level measurements collected at the Site, the water level ranges from 7.62 feet to 10.58 feet bgs. The groundwater flow direction is consistently to the northeast, with a gradient generally ranging from 0.008 to 0.01 foot/foot (ft/ft; Apex, 2021). The Site is currently used for commercial purposes and is supplied by municipal water.

2.3 Previous Work

Site investigations initially began in 1997 and were complete by 2020. Soil, groundwater, soil vapor, and ambient air monitoring were completed to assess the nature and extent of halogenated volatile organic compounds (HVOCs) within the former dry cleaner and adjacent tenant spaces. Investigation results can be found in Tables 1 through 4 and shown on Figures 3 through 6. A brief summary of investigation findings is provided below.

- **Soil Investigations.** Tetrachloroethene (PCE) is the only HVOC that has been detected in soil samples during soil investigations. No other VOCs have been detected in soil samples. PCE exceeded the Model Toxics Control Act (MTCA) Method A cleanup level (CUL) in soil samples HB-1 and HB-3 at depths of 8 inches bgs collected in 1997.
- **Groundwater Investigations.** PCE and chloroform were the only compounds detected in groundwater samples during groundwater investigations. Concentrations of PCE, chloroform, and other HVOCs have never been detected above MTCA Method A groundwater CULs in samples collected from monitoring wells.

- **Soil Vapor Investigations.** Concentrations of PCE exceeded MTCA Method B soil vapor CULs at locations within the former cleaner. Trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE) were infrequently detected. Soil vapor concentrations outside of the former cleaner (both adjacent tenant spaces and exterior areas) have not been detected above MTCA Method B CULs.
- **Ambient Air Investigations.** Indoor ambient air samples have been collected on three occasions within the former cleaner. PCE was the only HVOC detected in the former cleaner. None of the detected PCE concentrations exceeded the MTCA Method B indoor air CUL.

In 2019, a feasibility study/cleanup action plan (FS/CAP) was completed to describe a range of treatment methods for the Site and recommend a proposed cleanup action (Apex, 2019). The range of treatment methods were evaluated, and in July 2020, Ecology approved the FS/CAP which included SVE as the recommended cleanup method for the Site.

In 2021, an SVE work plan and design report was prepared to develop a remedial design and monitoring approach to address concentrations of PCE and associated breakdown products in subsurface soils and soil vapor exceeding cleanup levels at the Site. One SVE extraction well (SVE-1) and one observation well (OBS-1) were constructed at the Site on November 20, 2020. The SVE well (SVE-1) was installed in close proximity to the location of the former dry-cleaning machine in the tenant space (unit B004). The well has a total depth of 8 feet bgs with a well screen that extends from approximately 3 feet to 8 feet bgs. The observation well (OBS-1) was installed within the east parking lot adjacent to the former dry cleaner. The well has a total depth of 9 feet bgs and is screened from approximately 3 feet to 9 feet bgs. The surface completion for each well consists of a flush-mount monument with a secured, locked lid embedded in the concrete floor or pavement surface. Soil samples were collected at depths of 5 feet and the terminus of the borings and analyzed for waste profiling purposes. Well locations are shown on Figure 2. Soil boring logs are included in Appendix A.

On Janurary 8 and February 12, 2021 an SVE pilot test was conducted to evaluate air permeability and vacuum radius of influence (ROI) at the Site. The flow and pressure data collected from SVE-1 and OBS-1 were used in an analytical model (Air2D) developed by the U.S. Geological Survey (USGS) to determine the intrinsic air permeability of the geologic formation in the vicinity of SVE-1. The pilot test suggested an effective ROI of at least 28 feet is feasible at the Site using readily available regenerative blower equipment.

3.0 Remedial Construction

The SVE system was constructed in general accordance with the SVE Work Plan (Apex, 2021). In general, the design is based on the recommendations provided in the United States Army Corps of Engineers (USACE) Soil Vapor Extraction Engineering Manual (USACE, 2002). Construction of the SVE system included construction of the SVE extraction well and observation well, which were completed on November 20, 2020. The SVE system equipment was originally installed between November 15, 2021, and November 23, 2021.

Wyser Construction of Snohomish, Washington performed the construction activities. On November 22, 2021, the SVE system was vandalized, causing significant damage. Repairs of the system were delayed due to supply chain logistical challenges resulting from the COVID-19 pandemic. Damaged SVE components were reinstalled on March 30, 2023.

Apex documented the well drilling and installation of the mechanical system components (system piping, vaults, and above-ground equipment). The layout of the system is shown on Figure 7, and a schematic of the SVE system components is shown on Figure 8.

3.1 Preparatory Activities

The following activities were conducted prior to starting work to prepare the site and workers for construction activities.

3.1.1 Utility Locating

The Washington Utility Notification Center was notified of the proposed installation activities at least 48 hours prior to beginning construction. In addition, a private utility locator was retained to locate underground utilities and piping at the vapor extraction wells and trenching locations that might not be located through the One-Call system.

3.1.2 Health and Safety

A health and safety plan (HASP) was prepared prior to beginning construction activities. Tailgate health and safety meetings were conducted every morning prior to the start of each day's activities.

3.2 SVE System Installation Activities

The SVE system was installed between November 15 and 23, 2022. On November 22, 2021 the SVE system was vandalized, causing damage to the programming and electrical components. After repairs were made, the SVE system was restarted on April 18, 2022 and monitored for approximately three days to confirm it was operating within design parameters. On April 20, 2022, system readings were balanced and within design parameters. On May 20, 2022, during monthly monitoring, additional system alarms were encountered and the system was turned off upon arrival at the Site. Troubleshooting efforts determined that the blower had seized because the variable frequency drive (VFD) set points were tampered with by the vandal, causing the SVE blower to fail. New equipment was ordered and the VFD was reprogrammed. In April 2023, a new SVE blower and reprogrammed VFD were installed in the system. The SVE system is expected to run for a period of approximately 2 years. A photolog of SVE system installation activities is available in Appendix B.

3.2.1 System Piping Connection

Wyser Construction of Snohomish, Washington constructed the SVE piping. The piping layout for the SVE system is shown on Figure 7. Wyser first cut the concrete for the SVE well box expansion. Piping connections were constructed according to the details and specifications in the SVE Work Plan (Apex, 2021).

Piping was routed from beneath the floor vertically to the space above the drop-tile ceiling, to the building exterior through the rear wall of the building, and then to the proximity of the system equipment shed. The pipe penetration through the exterior building wall was sealed. Each piping run was sloped either toward the well or toward the system equipment (no local depressions in the piping) to prevent the accumulation of moisture (such as from condensation) in the piping.

During construction activities of SVE-1, a larger monument was built around the existing SVE-1 well casing (a 2-foot square adjacent to the existing wall) to allow access to the well and provide space for the piping connections (as shown on Figure 8). One gate valve and sampling port were installed on the vertical pipe extending from the wellhead. The gate valve allows for adjusting flow from the well over a continuous range from zero to the maximum flow capable from the well. The sampling port allows for either monitoring vacuum and air velocity or collecting a vapor sample.

3.2.2 System Blower and Vacuum Assembly

The SVE system is a self-contained unit that houses the vacuum blower (Rotron EN404), moisture separator, transfer pump, and storage drum. The system is an insulated skid-mounted shed (approximately 4 feet by 6 feet). A single carbon drum and the system control panel are outside of the shed. The system unit was connected to the SVE piping and electrical service in close proximity to the system. The treated discharge from the system exhausts from the top of the system shed through an elevated stack (approximately 20 feet above ground level). The control panel is equipped with alarms and controls to identify potential system faults/errors. A security fence was constructed around the system after their vandalism in 2021.

3.3 Construction Waste Management

Construction waste consisted of concrete from the well box expansion and personal protective equipment (PPE). The wastes were handled as follows.

- Concrete removed from well box area was segregated and disposed of as solid waste; and
- PPE and miscellaneous debris were disposed of as solid waste.

4.0 System Monitoring and Operation

The SVE system consists of one SVE well (SVE-1) which targets shallow soils from 2 to 7 feet bgs. The current configuration of the system is depicted on Figure 8. A summary of monitoring and operation activities is provided below.

4.1 System Startup

At the startup of the SVE system, valves to the SVE well were opened and the SVE system was operated for approximately six hours. The pressure to the SVE well was monitored hourly using Dwyer® Magnehelic 0- to 100-inch H2O pressure gauges to determine the vacuum distribution in the piping network of the system. In 2021, the system was monitored for approximately 2 days prior to system anomalies occurring and eventual shutdown. In 2023, the system was monitored on a daily basis for approximately three days after system startup, then on a weekly basis for three weeks. A sample of the pre-treatment vapor and effluent vapor were taken approximately one month after system startup.

4.2 Initial Operations

The system startup measurements collected in 2021 became relatively balanced at the system well after approximately one day of monitoring, with pressure readings gradually decreasing from 50 to 24 inches of water vacuum at the SVE wellhead. In 2023, measurements were consistent with the design criteria and were balanced at the system, with pressure readings consistently around 32 inches of water at the SVE wellhead.

Routine maintenance of the SVE system equipment includes inspection of the system and operating parameters (vacuum pressures and flow rates), maintenance of the blower motor in accordance with the manufacturer's recommendations, and removal of water that may collect in the moisture separator.

4.3 Monitoring and Performance

Routine monitoring is outlined in the table below.

Remedial Action Component(s)	Location	Monitoring	Frequency
SVE System	SVE-1, OBS-1, before and after carbon treatment	Photoionization detector (PID), vacuum, and flow monitoring	Daily for three days after system startup; weekly for three weeks, then monthly for two years
	Before and after carbon treatment	Vapor analytical sampling (Method TO-15)	One day after constant operation, then monthly for approximately two years.

The SVE system data collected during these monitoring events were used to assess the effectiveness of the system. Operation of the systems will continue as described in the table above.

4.3.1 Vapor Sample Results

Vapor samples were collected from pre-treatment SVE discharge and discharge air after carbon treatment during the first and second rounds of system startup monitoring. Samples were submitted to the analytical laboratory (Eurofins Air Toxics of Folsom, California). Vapor samples were analyzed for VOCs using Environmental Protection Agency (EPA) TO-15. Vapor analytical results are presented in Table 5, and the laboratory analytical reports are provided in Appendix C. The analytical results show a range of PCE concentrations from 3,800 to 160 micrograms per cubic meter ($\mu g/m^3$) before carbon treatment and non-detect after carbon treatment from the most recent round of vapor sampling. The system flow rate is about 64 cubic feet per minute (cfm). The startup concentration in 2023 equates to an annual removal rate of approximately 0.34 pounds per year.

4.3.2 SVE System Assessment

The flow and vacuum data collected during system startup monitoring in 2023 was consistent with the SVE design criteria. The SVE system had a vacuum between 24 and 33 inches of water before stabilizing at 33 inches of water. Vacuum data collected in 2023 from the observation well (OBS-1) indicate the SVE system achieved an average vacuum of -0.626 inches of water throughout the remedial action area. This data supports that the SVE system was running at the designed radius of influence of 28 feet according to the analytical model (Air2D) completed in 2021. Results of the SVE system monitoring are presented in Tables 5 through 7. The calculated ROI around SVE-1 is shown on Figure 3.

5.0 Summary and Conclusions

A summary of the remedial activities and data conclusions are provided below.

- The SVE system was constructed according to the SVE Work Plan (Apex, 2021). Construction began in November 2021. The SVE system was vandalized in 2021, causing damage to electrical components and the blower. Repairs were completed in March 2023 and the system was restarted.
- The designed ROI for the constructed SVE system of 28 feet indicates that the full-scale SVE system is covering the target treatment area (including beneath the Site building).
- Monitoring for the SVE system indicates an annual removal rate of approximately 0.34 pounds per year of PCE.

These data indicate that the system is operating as intended and that a large source of PCE may not be present in the subsurface near the former Custom Cleaners tenant space. Continued monitoring during

operation (via a combination of laboratory samples and PID measurements) will be used to assess system operation and track mass removal.

6.0 References

Apex Companies, LLC, 2019. *Feasibility Study/Cleanup Action Plan, Cascade Plaza, Everett, Washington.* October 31, 2019.

Apex, 2021. *Soil Vapor Extraction Work Plan and Design, Former Classic Cleaners – Cascade Plaza.* June 2, 2021.

U.S. Army Corps of Engineers (USACE), 2002. *Soil Vapor Extraction and Bioventing Engineering Manual (EM 1110-1-4001)*. June 2002.

Yount, James C.; James P. Minard; and Glenn R. Dembroff, 1993. *Geologic Map of Surficial Deposits in the Seattle 30' X 60' Quadrangle, Washington*.

Table 1 – Soil Analytical Results
Cascade Plaza
Everett, Washington

Sample Location (Depth)	Sample Date	HVOC concentrations (mg/kg)					
		PCE	TCE	cis-1,2-DCE	Vinyl Chloride	Chloroform	1,1,2 -TCA
	MTCA CUL (mg/kg)	0.05[a]	0.03[a]	160[b]	240[b]	800[b]	2[a]
HB-1 (8")	6/9/1997	**0.32**	<0.05	<0.05	<0.05	<0.05	<0.05
HB-2 (8")	6/9/1997	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
HB-3 (8")	6/9/1997	**0.13**	<0.05	<0.05	<0.05	<0.05	<0.05
HB-3 (3')	6/9/1997	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-1 (5')	6/9/1997	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-1 (7.5')	6/9/1997	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-1 (10')	6/9/1997	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-2 (5')	6/9/1997	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-2 (7.5')	6/9/1997	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-2 (10')	6/9/1997	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-3 (5')	6/9/1997	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-3 (7.5')	6/9/1997	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-3 (10')	6/9/1997	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-1 (10')	7/30/1997	ND*	ND*	ND*	ND*	ND*	ND*
MW-2 (10')	7/30/1997	ND*	ND*	ND*	ND*	ND*	ND*
MW-3 (10')	7/30/1997	ND*	ND*	ND*	ND*	ND*	ND*
Core 1 (1')	5/6/1999	<0.0094	<0.0094	<0.0094	<0.0094	<0.0094	<0.0094
Core 2 (1')	5/6/1999	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092
Core 3 (1')	5/6/1999	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
MW-4/S-3 (12.5')	5/7/1999	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
HB-4 (1')	12/10/2002	**0.0013**	<1.28	<1.28	<1.28	<1.28	<1.28
HB-5 (1')	12/10/2002	**0.00919**	<1.12	<1.12	<1.12	<1.12	<1.12
HB-6 (3')	12/10/2002	**0.00514**	<1.21	<1.21	<1.21	<1.21	<1.21
B-4 (1-2')	9/22/2014	**0.0097**	<0.00028	<0.00028	<0.00028	NA	NA
B-4 (3')	9/22/2014	**0.0029**	<0.00035	<0.00035	<0.00035	NA	NA
B-5 (2'-3')	9/22/2014	**0.006**	<0.0003	<0.0003	<0.0003	NA	NA
B-5 (4.5')	9/22/2014	**0.0013**	<0.00027	<0.00027	<0.00027	NA	NA
B-6 (2'-3')	9/22/2014	**0.00057**	<0.0003	<0.0003	<0.0003	NA	NA
B-6 (4')	9/22/2014	**0.0016**	<0.00033	<0.00033	<0.00033	NA	NA
B-7 (0-1')	9/22/2014	**0.00095**	<0.00029	<0.00029	<0.00029	NA	NA
B-7 (7')	9/22/2014	**0.00065**	<0.00037	<0.00037	<0.00037	NA	NA
B-7 (1')	4/27/2016	**0.0129**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B-8 (1')	4/27/2016	**0.0225**	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044
B-8 (4')	4/27/2016	**0.0167**	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
B-8 (9')	4/27/2016	**0.0024 J**	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048
B-9 (1')	4/27/2016	**0.0011 J**	<0.0024	<0.0024	<0.0024	<0.00024	<0.00024
VP-1 (1')	4/27/2016	**0.0130**	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052
VP-1 (3')	4/27/2016	**0.0024 J**	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056
VP-2 (1')	4/27/2016	**0.0029 J**	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044
VP-2 (4')	4/27/2016	**0.0067**	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056
SVE-1-(5')	11/20/2020	**0.0758 J+**	<0.00121	<0.00303	<0.00303	NA	NA
SVE-1-(8')	11/20/2020	**0.0523 J+**	<0.00115	<0.00288	<0.00288	NA	NA
OBS-1-(5')	11/20/2020	**0.143 J+**	<0.00166	<0.00415	<0.00415	NA	NA
OBS-1-(9')	11/20/2020	**0.00956 J+**	<0.00118	<0.00296	<0.00296	NA	NA
SB-1-2	5/14/2021	**0.00380**	<0.00112	<0.00281	<0.00281	<0.00281	<0.00281
SB-1-5	5/14/2021	<0.00299	<0.00120	<0.00299	<0.00299	<0.00299	<0.00299
SB-1-8	5/14/2021	<0.00378	<0.00151	<0.00378	<0.00378	<0.00378	<0.00378

Notes:

1. HVOC = Halogenated volatile organic compound.
2. PCE = Tetrachloroethene.
3. TCE = Trichloroethene.
4. DCE = Dichloroethene.
5. TCA = Trichloroethane.
6. MTCA CUL = Model Toxics Control Act Cleanup Level.
7. mg/kg = milligram per kilogram.
8. a = MTCA Method A Unrestricted Land Use Table Value.
9. b = MTCA Method B Non-Carcinogen CUL Standard Formula Value (Unrestricted Land Use).
10. ND* = Not detected at a concentration above the method detection limit, which is not available for this report.
11. < = Not detected at a concentration above the method reporting limit or practical quantitation limit.
12. Bold = analyte was detected at a concentration above the method detection limit.
13. Shaded = concentration exceeds the CUL.
14. J = Estimated value. Concentration detected between the method reporting limit and method detection limit.
15. J+ = Result is estimated and may be biased high.

Table 2 – Groundwater Analytical Results
Cascade Plaza
Everett, Washington

Sample Location	Sample Date	HVOC concentration (ug/L)					
		PCE	TCE	cis-1,2-DCE	Vinyl Chloride	Chloroform	1,1,1-TCA
	MTCA CUL (ug/L)	5[a]	5[a]	16[b]	0.2[a]	80[b]	200[a]
	Updated Vapor Intrusion SL (ug/L)	22.9	1.6	--	0.347	1.2	5,240
B-2-W	6/6/1997	**1.3**	<0.5	<0.5	<0.5	***5.3***	<0.5
B-3-W	6/6/1997	**3.6**	<0.5	<0.5	<0.5	***16***	<0.5
MW-1	7/31/1997	<0.5	<0.5	<0.5	<0.5	0.9	<0.5
	2/11/1998	<10	<10	<10	<10	<10	<10
	11/9/1998	<2	<2	<2	<2	<2	<2
	5/6/1999	<0.4	<0.4	<0.4	<0.2	<0.4	<0.4
	8/11/1999	<0.4	<0.4	<0.4	<0.2	<0.4	<0.4
	12/28/1999	<0.4	<0.4	<0.4	<0.2	<0.4	<0.4
	3/30/2000	<0.4	<0.4	<0.4	<0.2	<0.4	<0.4
	8/2/2000	<0.4	<0.4	<0.4	<0.2	<0.4	<0.4
	7/16/2013	<1	<1	<1	<1	<1	<1
	3/27/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/25/2014	<0.1	<0.1	<0.1	<0.02	<0.1	<0.1
	6/25/2014 DUP	<0.1	<0.1	<0.1	<0.02	<0.1	<0.1
	9/22/2014	<0.1	<0.1	<0.1	<0.02	<0.1	<0.1
	11/12/2014	<0.1	<0.1	<0.1	<0.02	<0.1	<0.1
	5/24/2016	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-2	7/31/1997	**3.8**	<0.5	<0.5	<0.5	***15***	<0.5
	2/11/1998	<2	<2	<2	<2	<2	<2
	11/9/1998	***3***	<0.4	<0.4	<0.2	***3***	**8**
	5/6/1999	**1.1**	<0.4	<0.4	<0.2	<0.4	<0.4
	8/11/1999	**1.2**	<0.4	<0.4	<0.2	**0.37**	<0.4
	12/28/1999	**1**	<0.4	<0.4	<0.2	***0.71***	<0.4
	3/30/2000	**0.62**	<0.4	<0.4	<0.2	<0.4	<0.4
	8/2/2000	**0.82**	<0.4	<0.4	<0.2	<0.4	<0.4
	7/16/2013	<1	<1	<1	<1	<1	<1
	7/16/2013 DUP	<1	<1	<1	<1	<1	<1
	3/27/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/27/2014 DUP	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/25/2014	**0.24**	<0.1	<0.1	<0.02	<0.1	<0.1
	10/8/2014	**0.15**	**0.06 J**	**0.026**	<0.02	<0.1	<0.1
	11/12/2014	**0.2**	<0.1	<0.1	<0.02	<0.1	<0.1
	5/24/2016	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	5/24/16 DUP	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-3	7/31/1997	**3.9**	<0.5	<0.5	<0.5	***15***	<0.5
	2/11/1998	<2	<2	<2	<2	***5.2***	<2
	11/9/1998	**3**	<0.4	<0.4	<0.2	***8***	<0.4
	5/6/1999	**1.3**	<0.4	<0.4	<0.2	**0.51**	<0.4
	8/11/1999	**1.4**	<0.4	<0.4	<0.2	**0.64**	3
	12/28/1999	**1.4**	<0.4	<0.4	<0.2	<0.4	<0.4
	3/30/2000	**1.2**	<0.4	<0.4	<0.2	<0.4	<0.4
	8/2/2000	**1.2**	<0.4	<0.4	<0.2	<0.4	<0.4
	7/16/2013	<1	<1	<1	<1	<1	<1
	3/27/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/25/2014	**0.18**	<0.1	<0.1	<0.02	<0.1	<0.1
	9/22/2014	**0.17**	**0.073**	**0.13 J**	<0.02	<0.1	<0.1
	10/8/2014	**0.21**	**0.087 J**	**0.12**	**0.031**	<0.1	<0.1
	10/8/2014 DUP	**0.21**	**0.068 J**	**0.13**	<0.02	<0.1	<0.1
	11/12/2014	**0.17**	<0.1	**0.11**	<0.02	<0.1	<0.1
	5/24/2016	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Please see notes at end of table.

Table 2 – Groundwater Analytical Results
Cascade Plaza
Everett, Washington

Sample Location	Sample Date	HVOC concentration (ug/L)					
		PCE	TCE	cis-1,2-DCE	Vinyl Chloride	Chloroform	1,1,1-TCA
MTCA CUL (ug/L)		5[a]	5[a]	16[b]	0.2[a]	80[b]	200[a]
Updated Vapor Intrusion SL (ug/L)		22.9	1.6	--	0.347	1.2	5,240
MW-4	5/6/1999	**0.41**	<0.4	<0.4	<0.2	***2.1***	<0.5
	8/11/1999	**0.16**	<0.4	<0.4	<0.2	***0.99***	<0.4
	12/28/1999	**0.11**	<0.4	<0.4	<0.2	**0.46**	<0.4
	3/30/2000	<0.4	<0.4	<0.4	<0.2	<0.4	<0.4
	8/2/2000	<0.4	<0.4	<0.4	<0.2	**0.4**	<0.4
	7/16/2013	<1	<1	<1	<1	<1	<1
	3/27/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/25/2014	<0.5	<0.5	<0.5	<0.5	**0.36**	<0.5
	9/22/2014	**0.062 J**	<0.025	<0.025	<0.013	**0.36**	<0.025
	11/12/2014	<0.1	<0.1	<0.1	<0.02	**0.33**	<0.1
	11/12/2014 DUP	<0.1	<0.1	<0.1	<0.02	**0.31**	<0.1
	5/24/2016	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HB-4 GW	12/10/2002	**9.36**	<1	<1	<0.4	***3.08***	<1
HB-5 GW	12/10/2002	**4.92**	<1	<1	<0.4	<1	<1

Notes:

1. HVOC = Halogenated volatile organic compound.
2. PCE = Tetrachloroethene.
3. TCE = Trichloroethene.
4. DCE = Dichloroethene.
5. TCA = Trichloroethane.
6. MTCA CUL = Model Toxics Control Act Cleanup Level.
7. Updated Air and Vapor Intrusion Screening Levels (SL) from updated SL table at http://www.ecy.wa.gov/programs/tcp/policies/VaporIntrusion/2015-changes.html
8. -- = SL not available
9. ug/L = microgram per liter.
10. a = MTCA Method A Table Value.
11. b = MTCA Method B Non-Carcinogen CUL Standard Formula Value (Unrestricted Land Use).
12. < = Not detected at a concentration above the method reporting limit or practical quantitation limit.
13. Bold = analyte was detected at a concentration above the method detection limit.
14. Shaded concentration exceeds the groundwater CUL.
15. Italicized concentration exceeds the vapor intrusion SL.

Table 3 – Soil Vapor Analytical Results
Cascade Plaza
Everett, Washington

Sample Location (Depth)	Sample Date	HVOC concentrations (ug/m^3)			
		PCE	TCE	cis-1,2-DCE	Vinyl Chloride
Method B Soil Gas SL (ug/m3)		320	12	--	9.4
Temporary Soil Vapor Sample Locations					
VS-1 (3")	10/4/2013	***2,500***	<1.3	<6.5	<4.2
VS-2 (3")	10/4/2013	***3,600***	<2.7	<9.9	<6.4
VS-3 (3")	11/20/2013	***2,400***	<5.2	<3.8	<2.4
VS-4 (3")	11/20/2013	***990***	<5.1	<3.8	<2.4
VS-5 (3")	12/6/2013	<8.1	<6.4	<4.7	<3.0
VS-6 (3")	12/6/2013	**8.4**	<5.7	<4.2	<2.7
VS-7 (3")	12/6/2013	<7.1	<5.6	<4.1	<2.7
VS-8 (5')	12/19/2013	<8.3	<6.6	<4.9	<3.1
VS-9 (5')	12/19/2013	<7.1	<5.6	<4.1	<2.7
VS-10 (5')	12/19/2013	<7.0	<5.6	<4.1	<2.6
VS-11 (5')	12/19/2013	<6.8	<5.4	<4.0	<2.6
VS-12 (5')	12/19/2013	<7.1	<5.6	<4.1	<2.7
VS-13 (5')	12/19/2013	<6.8	<5.4	<4.0	<2.6
VS-14 (5')	12/19/2013	<7.0	**10**	<4.1	<2.6
VS-15 (5')	12/19/2013	<7.0	<5.5	<4.2	<2.6
VS-16 (3")	9/22/2014	**150**	**8.4**	**1.9**	<0.58
VS-17 (3")	9/22/2014	***5,600***	<23	<17	<11
VS-18 (3")	9/22/2014	9	<1.3	<0.99	<0.32
Permanent Soil Vapor Locations					
VP-1	5/24/2016	**8,800**	<19	<14	<8.9
VP-2	5/24/2016	**10,000**	<21	<16	<10

Notes:

1. HVOC = Halogenated Volatile Organic Compound.
2. PCE = Tetrachloroethene.
3. TCE = Trichloroethene.
4. DCE = Dichloroethene.
5. ug/m^3 = microgram per cubic meter.
6. Updated Vapor Intrusion Screening Levels (SL) from updated SL table at https://www.ezview.wa.gov/Portals/_1987/Documents/Documents/CLARC_VI_MethodB.pdf
7. Bold = analyte was detected at a concentration above the method detection limit.
8. Shaded = concentration exceeds the SL.
9. < = Not detected at a concentration above the method reporting limit or practical quantitation limit.

Table 4 – Ambient Air Results
Cascade Plaza
Everett, Washington

Sample Location (Depth)	Sample Date	HVOC concentrations (ug/m^3)			
		PCE	TCE	cis-1,2-DCE	Vinyl Chloride
Method B Indoor Air Cleanup Level (ug/m^3)		9.6	0.37	--	0.28
Ambient Air Stations					
AA-1 (Backgound)	12/6/2013	<0.21	<0.16	<0.12	<0.039
AA-2 (Indoors)	11/20/2013	<5.6	<4.5	<3.3	<2.1
AA-3 (Indoors)	11/20/2013	<5.6	<4.5	<3.3	<2.1
AA-4 (Background)	9/22/2014	<0.23	**0.2**	<0.14	<0.044
AA-5 (Indoors)	9/22/2014	**0.52**	<0.17	<0.13	<0.041
AA-6 (Indoors)	9/22/2014	<0.23	<0.18	<0.13	<0.043
AA-7 (Background)	5/24/2016	**1.3**	<0.22	<0.16	<0.053
AA-8 (Indoor)	5/24/2016	**5.4**	<0.19	<0.14	<0.044

Notes:

1. HVOC = Halogenated Volatile Organic Compound.
2. PCE = Tetrachloroethene.
3. TCE = Trichloroethene.
4. DCE = Dichloroethene.
5. ug/m^3 = microgram per cubic meter.
6. MTCA CUL = Model Toxics Control Act Cleanup Level (Unrestricted Land Use).
7. Bold = analyte was detected at a concentration above the method detection limit.
8. Shaded = concentration exceeds the SL.
9. < = Not detected at a concentration above the method reporting limit or practical quantitation limit.
10. Ambient air samples collected on May 24, 2016 named AA-1 (Background) and AA-2 (Indoor) were renamed AA-7 (Background) and AA-8 (Indoor) post sample collection and analaytical analyses to maintain cohesion in the sampling timeline. Tables and figures reflect the nomenclature change.
11. Updated Cleanup Levels from updated table at https://www.ezview.wa.gov/Portals/_1987/Documents/Documents/CLARC_VI_MethodB.pdf

Table 5 – SVE Vapor Analytical Results
Cascade Plaza
Everett, Washington

Sample Location	Sample Date	HVOC concentrations (µg/m^3)					
		PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride
Pre-Carbon	4/19/2022	**3,800**	<80	<59	<59	<59	<38
Post-Carbon	4/19/2022	<0.96	<0.76	<0.56	<0.56	<0.56	<0.36
Effluent	4/28/2023	<5.2	<4.2	<3.1	<3.1	<3.1	<2.0
	5/31/2023	<4.6	<3.6	<2.7	<2.7	<2.7	<1.7
Influent	4/28/2023	**160**	<4.0	<3.0	<3.0	<3.0	<1.9
	5/31/2023	**22**	<3.8	<2.8	<2.8	<2.8	<1.8

Notes:

1. HVOC = Halogenated Volatile Organic Compound.
2. PCE = Tetrachloroethene.
3. TCE = Trichloroethene.
4. DCE = Dichloroethene.
5. µg/m^3 = Micrograms per cubic meter.
6. Bold = Analyte was detected at a concentration above the minimum reporting limit.
7. < = Not detected at a concentration above the minimum reporting limit.

Table 6 – SVE System Monitoring Results
Cascade Plaza
Everett, Washington

Monitoring Point	Pre-Blower		Effluent/Post Blower		SVE-1				OBS-1		VFD	
Date	Vacuum (in. W)	PID (ppm)	Pressure (in. W)	PID (ppm)	Vacuum (in. W)	PID (ppm)	Flow Rate (FPM)*	Flow Rate (CFM)	Vacuum (in. W)	PID (ppm)	Hertz (Hz)	Amps
4/18/2022	24	--	12.161	0	-5.959	33.5	--	---	-0.026	0	---	---
4/19/2022	26	--	12.137	0	-5.953	20.2	--	---	-0.032	0	---	---
3/30/2023	24	--	2.14	0	> -15	--	--	---	-0.047	0	---	---
3/31/2023	24	--	2.192	0	> -15	--	--	---	-0.081	0	---	---
4/6/2023	24	--	2.055	0	-2.529	--	--	---	-0.022	0	30.1	3.3
4/14/2023	26	--	1.965	0	-12.062	--	--	---	-0.069	0	30.2	3.4
4/21/2023	32	--	7.87	0	-32	--	--	---	-0.214	0	50	---
4/28/2023	32	--	8.186	0	-24	--	--	---	-0.076	0	---	---
5/5/2023	33	--	8.472	0	-28.5	--	2426	211.29	-0.117	0	50.1	9.6
5/31/2023	32	0.1	8.347	0	-29.5	0.1	1099.5	95.76	-0.037	0	50.1	9.5

Notes:

Pressures measured in inches of H_2O

--- = Not measured.

Photoionization detector (PID) readings in parts per million (ppm).

SVE System shut off from 11/22/2021 to 4/17/2022, and 4/20/2022 to 3/29/2023

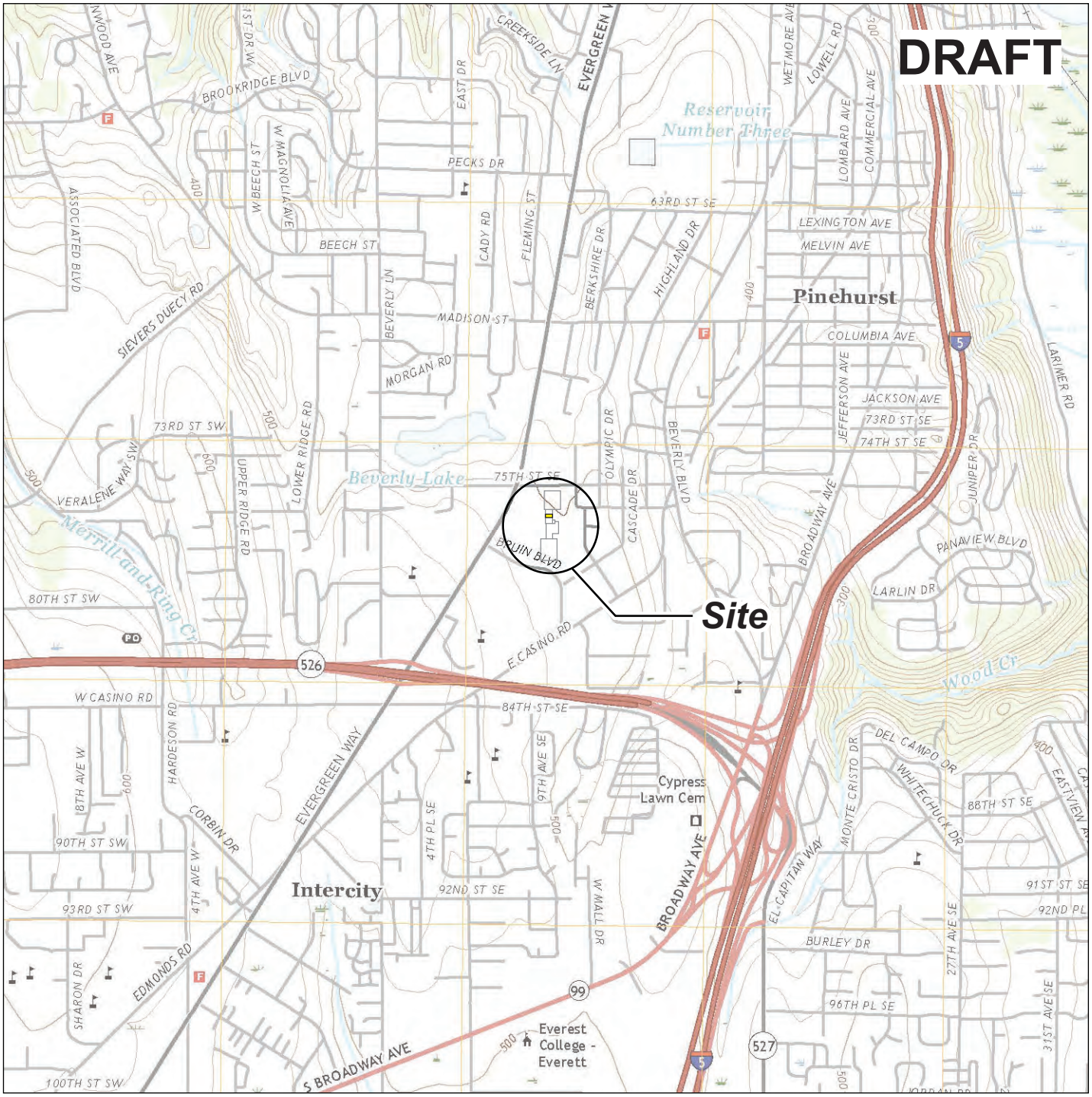
SVE System originally started on 4/18/2022, and restarted on 3/30/2023

Table 7 – SVE Mass Removal Results
Cascade Plaza
Everett, Washington

Location Sample Name	SVE Precarbon	SVE Influent
Date	4/19/2022	4/28/2023
Operating Period	4/19/2022-4/20/2022	3/30/2023-4/28/2023
Days Per Operating Period	2	30
Air Flow and Conversions		
Air Velocity (fpm)	2426	2426
ft^2	0.0907	0.0907
Air flow Rate (cf/m)	64.00	64.00
1 day (min)=	1,440	1,440
Air flow Rate (cf/day)	92,160	92,160
1 cf (m^3)=	0.0283	0.0283
Air flow Rate (m^3 per day)	2,610	2,610
PCE Mass		
PCE Concentration (µg/m^3)	3,800	160
Total PCE Mass (µg/day)	9.92E+06	4.18E+05
1 µg (lb)	2.20E-09	2.20E-09
Total PCE Mass (lb)	0.0437	0.0276
TAC Mass		
TAC conc (µg/m^3)	3,800	160
Total TAC Mass (µg/day)	9.92E+06	4.18E+05
1 µg (lb)	2.20E-09	2.20E-09
Total TAC Mass (lb)	0.044	0.028

Notes:

1. TAC = Toxic Air Contaminant
2. lb = Pounds
3. ug/m3 = microgram per cubic meter.



Note: Base map prepared from USGS 7.5-minute quadrangle of Everett, WA, dated 2020 as provided by USGS.gov.

0 2,000 4,000

Approximate Scale in Feet

8/3/2023

Site Location Map

Former Classic Cleaners
Cascade Plaza
Everett, Washington

Apex Companies, LLC 801 NW 42nd Street, #204 Seattle, Washington	Project Number: REGEN-611	Drawn: JP	Approved: AU	Figure 1
	August 2023			

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DRAFT

VS-10 (2013)

VS-13 (2013)

Cigar Land

Parking Lot

Parking Lot

Sidewalk

Vacant

VS-7 (2013)

Core 1 (1999)

Core 2 (1999)

Core 3 (1999)

Unit B004 Domino's
(Former Classic Cleaners)

Office

Drain Line

MW-3

B-6 (2014)

DR

AA-8 (2016)

DR

OBS-1 (2020)

B-7 (2014)

HB-3 (1997)

HB-4 (2002)

B-7 (2016)

B-5 (2014)

Approximate
Location of Former
Dry Cleaning Equipment

VS-3 (2013)

B-2 (1997)

HB-6 (2002)

VP-1 (2016)

VS-2 (2013)

VP-2 (2016)

B-9 (2016)

VS-17 (2014)

Wall

MW-1

B-1 (1997)

AA-3 (2013)

VS-16 (2014)

B-4 (2014)

AA-2 (2013)

AA-1 (2013)

B-8 (2016)

HB-5 (2002)

AA-5 (2014)

AA-4 (2014)

HB-1 (1997)

SVE-1 (2020)

Front
Entrance

AA-6 (2014)

VS-1 (2013)

MW-2

VS-4 (2013)

HB-2 (1997)

Counter

Cold
Storage

Storage
Area

DR

DR

B-3 (1997)

HearUSA

VS-18 (2014)

Drain (Typ.)

Drain Line

VS-6 (2013)

AA-7 (2016)

N

0 10 20

Approximate Scale in Feet

8/3/2023

Legend:

- MW-1 — Monitoring Well Location
- SVE-1 (2020) — Vapor Extraction Well/Monitoring Point Location (2020)
- OBS-1 (2020) — Observation Well Location (2020)
- VS-3 (2013) — Soil Gas Sample Location (2013, 2014)
- VP-1 (2016) — Permanent Soil Vapor Monitoring Location (2016)
- AA-2 (2016) — Indoor Ambient Air Sample Location (2013, 2014, 2016)
- AA-1 (2016) — Outdoor Ambient Air Sample Location (2013, 2014, 2016)
- HB-4 (2002) — Soil and Groundwater Sample Location (1997, 2002)
- *B-7 (2016)* — Historical Soil Boring Location (1997, 1999, 2002, 2014, 2016)
- Axial Fan Location
- HVAC Return
- HVAC Vent
- Air Flow Direction (Inferred)

NOTE: All locations are approximate.

Site Plan

Former Classic Cleaners
Cascade Plaza
Everett, Washington

Apex Companies, LLC
801 NW 42nd Street, #204
Seattle, Washington

Project Number:	Drawn:	Approved:	Figure
REGEN-611	JP	AU	2

May 2023

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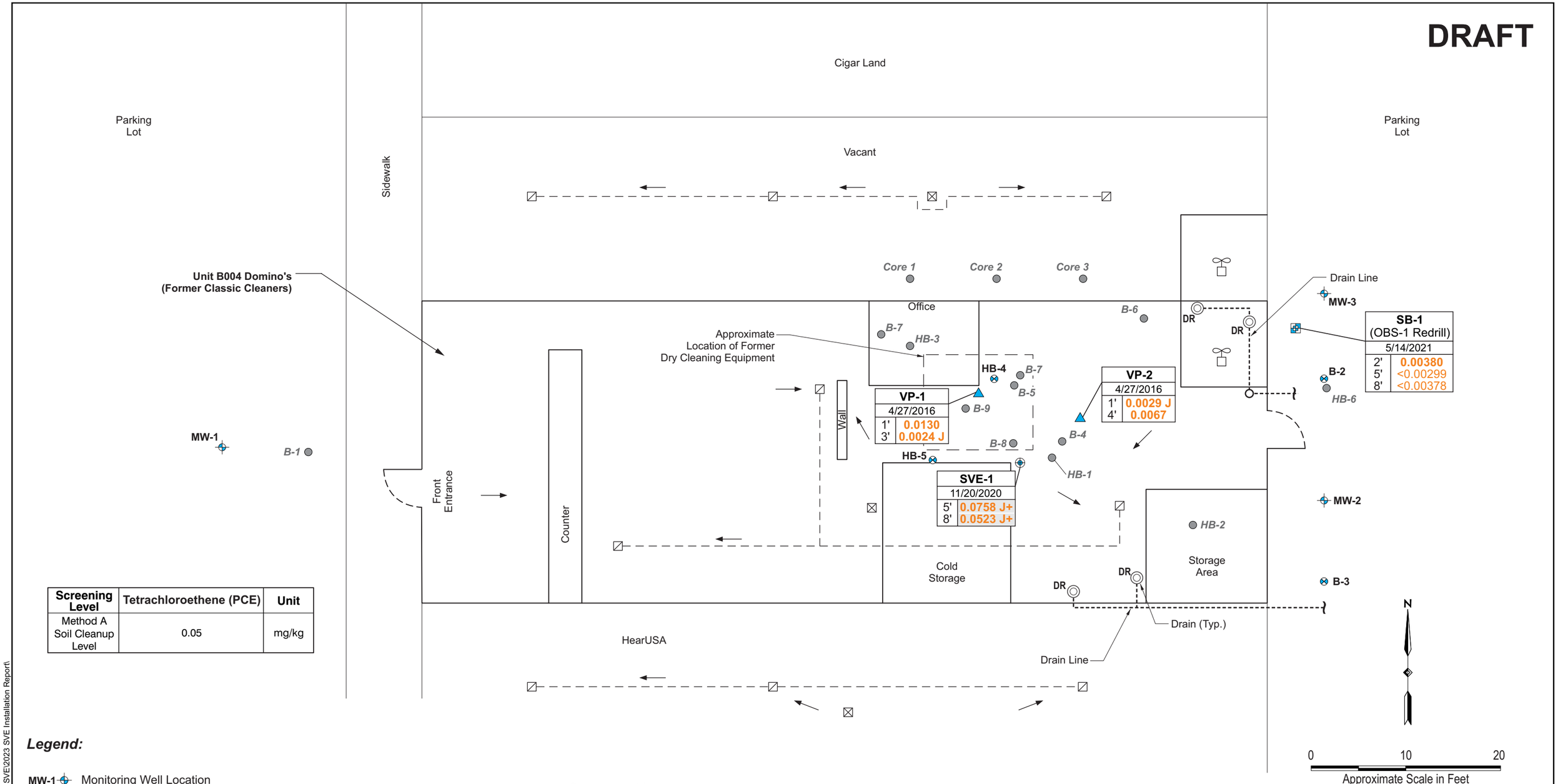

Screening Level	Tetrachloroethene (PCE)	Unit
Method A Soil Cleanup Level	0.05	mg/kg

Legend:

- **MW-1** Monitoring Well Location
- **SVE-1** Vapor Extraction Well/Monitoring Point Location (2020)
- **OBS-1** Observation Well Location (2020)
- **HB-4** Soil and Groundwater Sample Location (1997, 2002)
- **VP-1** Permanent Soil Vapor Monitoring Location (2016)
- ***B-7*** Historical Soil Boring Location (1997, 1999, 2002, 2014, 2016)

VP-1	
4/27/2016	
1'	0.0130
3'	0.0024 J

- Sample Identification
- Date Sampled
- Tetrachloroethene Concentration in milligrams per kilogram (mg/kg)
- Depth Sampled in Feet Below Ground Surface

Highlight = Concentration Exceeds Screening Level
J = Concentration Estimated
J+ = Concentration Estimated; Biased High

- Axial Fan Location
- HVAC Return
- HVAC Vent
- Air Flow Direction (Inferred)

NOTE: All locations are approximate.

8/3/2023

Soil Results

Former Classic Cleaners
Cascade Plaza
Everett, Washington

Apex Companies, LLC
801 NW 42nd Street, #204
Seattle, Washington

Project Number:	Drawn:	Approved:	Figure
REGEN-611	JP	AU	3

August 2023

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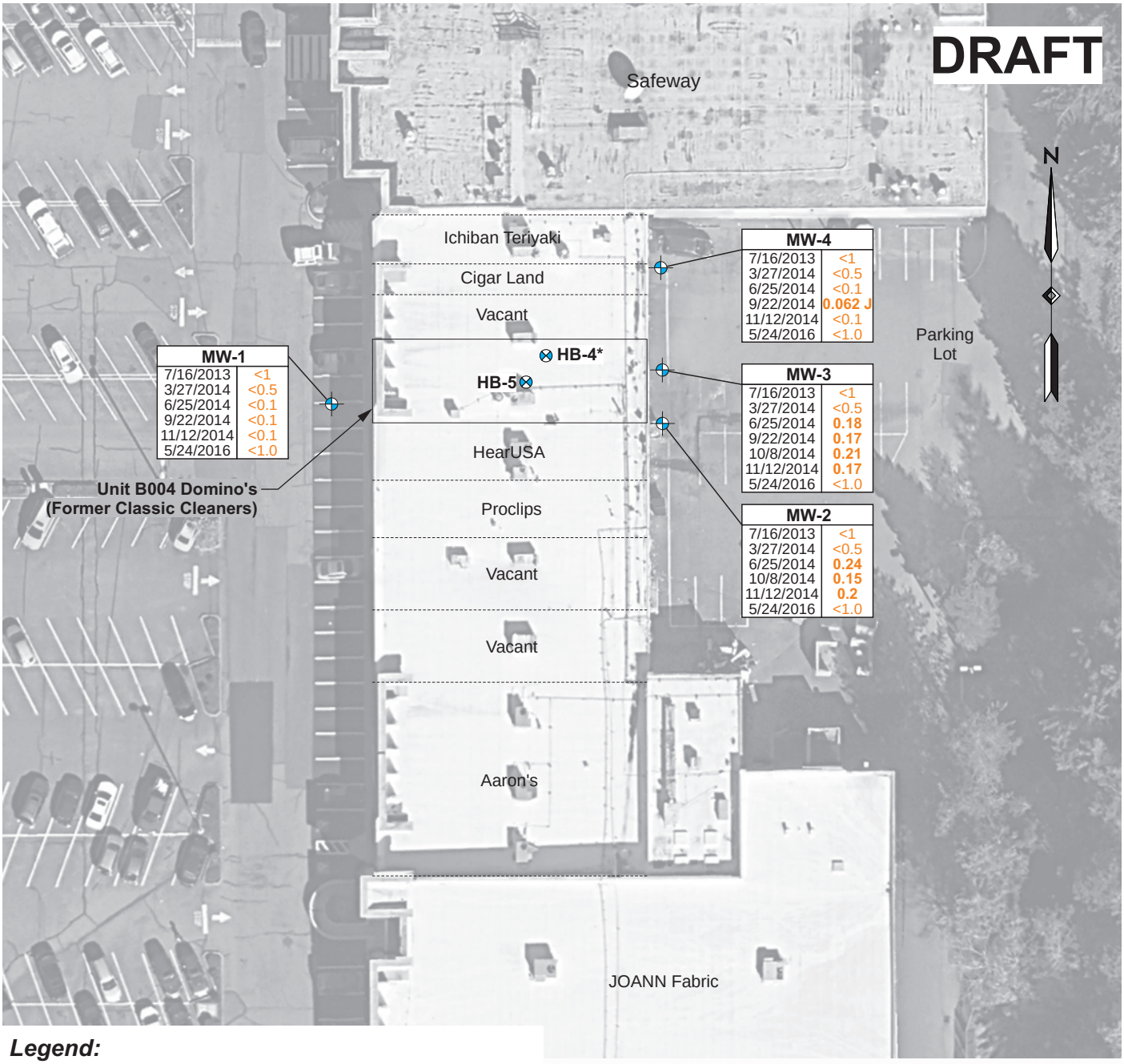

Legend:

MW-1 Monitoring Well Location

HB-5 Groundwater Sample Location (2002)

HB-4* HB-4 is the only Interior Sample Location Ever to Exceed the 5 µg/L Cleanup Level (9.36 µg/L) - This was a Discrete Groundwater Sample

NOTES: Base map prepared from Google Earth Pro imagery. Aerial dated August 31, 2020. All locations are approximate.

MW-4	
7/16/2013	<1
3/27/2014	<0.5
6/25/2014	<0.1
9/22/2014	0.062 J
11/12/2014	<0.1
5/24/2016	<1.0

Location Identification

Tetrachloroethene Concentration in micrograms per Liter (µg/L)
J = Concentration Estimated

Sampling Date

Screening Level	Tetrachloroethene (PCE)	Unit
MTCA Method A Groundwater Cleanup Level	5	µg/L
Updated Vapor Intrusion Screening Level	22.9	µg/L

0 50 100

Approximate Scale in Feet

8/3/2023

Groundwater Results

Former Classic Cleaners
Cascade Plaza
Everett, Washington

Apex Companies, LLC
801 NW 42nd Street, #204
Seattle, Washington

Project Number:	Drawn:	Approved:
REGEN-611	JP	AU

August 2023

Figure 4

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Cigar Land

Parking Lot

Sidewalk

Vacant

Parking Lot

VS-10
12/19/2013
5" <7.0

VS-13
12/19/2013
5" <6.8

VS-7
12/6/2013
3" <7.1

Unit B004 Domino's
(Former Classic Cleaners)

Drain Line

MW-3

Office

Approximate Location of Former Dry Cleaning Equipment

VS-3
11/20/2013
3" 2,400

VS-2
10/4/2013
3" 3,600

DR

DR

B-2 (1997)

VP-2
5/24/2016
3' 10,000

VP-1
5/24/2016
3' 8,800

Wall

MW-1

VS-16
9/22/2014
3" 150

VS-17
9/22/2014
3" 5,600

Front Entrance

Counter

VS-1
10/4/2013
3" 2,500

MW-2

VS-4
11/20/2013
3" 990

Cold Storage

Storage Area

DR

DR

B-3 (1997)

VS-18
9/22/2014
3" 9

Drain (Typ.)

HearUSA

Drain Line

VS-6
12/6/2013
3" 8.4

N

0 10 20

Approximate Scale in Feet

Screening Level	Tetrachloroethene (PCE)	Unit
Vapor Intrusion SL	320	µg/m³

Legend:

MW-1 Monitoring Well Location

VS-3 Soil Gas Sample Location (2013, 2014)

VP-1 Permanent Soil Vapor Monitoring Location (2016)

VP-2
5/24/2016
3' 10,000

- Sample Identification
- Date Sampled
- Tetrachloroethene Concentration in micrograms per cubic meter (µg/m³)
- Depth Sampled in Feet Below Ground Surface

Highlight = Concentration Exceeds Screening Level
J = Concentration Estimated
J+ = Concentration Estimated; Biased High

Axial Fan Location

HVAC Return

HVAC Vent

Air Flow Direction (Inferred)

NOTE: All locations are approximate.

8/3/2023

PCE Soil Vapor Results

Former Classic Cleaners
Cascade Plaza
Everett, Washington

Apex Companies, LLC
801 NW 42nd Street, #204
Seattle, Washington

Project Number:	Drawn:	Approved:	Figure
REGEN-611	JP	AU	5

August 2023

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DRAFT

Cigar Land

Parking Lot

Parking Lot

Vacant

Sidewalk

Unit B004 Domino's
(Former Classic Cleaners)

Office

Approximate Location of Former Dry Cleaning Equipment

Wall

Drain Line

MW-3

MW-1

MW-2

AA-8
5/24/2016
5.4

AA-2
11/20/2013
<5.6

AA-1
12/6/2013
<0.21

AA-5
9/24/2014
0.52

AA-4
9/22/2014
<0.23

AA-3
11/20/2013
<5.6

AA-6
9/22/2014
<0.23

AA-7
5/24/2016
1.3

Front Entrance

Counter

Cold Storage

Storage Area

DR

DR

DR

Drain (Typ.)

Drain Line

HearUSA

N

0 10 20

Approximate Scale in Feet

Screening Level	Tetrachloroethene (PCE)	Unit
Method B Cleanup Level	5	µg/m^3

Legend:

MW-1 Monitoring Well Location

AA-2 Indoor Ambient Air Sample Location (2013, 2014, 2016)

AA-1 Outdoor Ambient Air Sample Location (2013, 2014, 2016)

AA-5 Sample Identification
9/24/2014 Date Sampled
0.52 Tetrachloroethene Concentration in micrograms per cubic meter (µg/m^3)

Axial Fan Location

HVAC Return

HVAC Vent

Air Flow Direction (Inferred)

NOTE: All locations are approximate.

8/3/2023

Ambient Air Results

Former Classic Cleaners
Cascade Plaza
Everett, Washington

Apex Companies, LLC
801 NW 42nd Street, #204
Seattle, Washington

Project Number:	Drawn:	Approved:	Figure
REGEN-611	JP	AU	6

August 2023

I:\Client\Regency\REGEN-611 Cascade Plaza SVE\2023 SVE Installation Report\REGEN-611 06 (Air - Cascade).des

DRAFT

VS-10 (2013)

VS-13 (2013)

Cigar Land

Parking Lot

Parking Lot

Sidewalk

Vacant

VS-7 (2013)

SVE WELL PIPING (INSTALLED THROUGH CEILING AND ROOF). PIPE SUPPORT EVERY 5 FEET.

Unit B004 Domino's (Former Classic Cleaners)

Core 1 (1999)

Core 2 (1999)

Core 3 (1999)

Office

MW-3

OBS-1

B-6 (2014)

AA-8 (2016)

B-7 (2014)

HB-3 (1997)

HB-4 (2002)

B-7 (2016)

Approximate Location of Former Dry Cleaning Equipment

EQUIPMENT SHED (SEE FIGURE 8)

VS-3 (2013)

B-5 (2014)

B-2 (1997)

HB-6 (2002)

VP-1 (2016)

VS-2 (2013)

VP-2 (2016)

Wall

VS-17 (2014)

MW-1

B-1 (1997)

AA-3 (2013)

VS-16 (2014)

B-9 (2016)

B-4 (2014)

AA-2 (2013)

B-8 (2016)

AA-1 (2013)

HB-5 (2002)

SVE-1

HB-1 (1997)

AA-5 (2014)

AA-4 (2014)

VS-1 (2013)

MW-2

Front Entrance

AA-6 (2014)

Counter

VS-4 (2013)

HB-2 (1997)

SEAL PENETRATION OF THE EXTERIOR WALL.

Cold Storage

Storage Area

B-3 (1997)

HearUSA

VS-18 (2014)

N

VS-6 (2013)

AA-7 (2016)

0 10 20

Approximate Scale in Feet

8/3/2023

Legend:

- MW-1 — Monitoring Well Location
- SVE-1 (2020) — Vapor Extraction Well/Monitoring Point Location (2020)
- OBS-1 (2020) — Observation Well Location (2020)
- VS-3 (2013) — Soil Gas Sample Location (2013, 2014)
- VP-1 (2016) — Permanent Soil Vapor Monitoring Location (2016)
- AA-2 (2016) — Indoor Ambient Air Sample Location (2013, 2014, 2016)
- AA-1 (2016) — Outdoor Ambient Air Sample Location (2013, 2014, 2016)
- HB-4 (2002) — Soil and Groundwater Sample Location (1997, 2002)
- B-7 (2016) — Historical Soil Boring Location (1997, 1999, 2002, 2014, 2016)
- Approximate Extent of Remedial Action Area
- Estimated Zone of Influence
- Proposed Sub-Slab Soil Vapor Point Location

NOTE: All locations are approximate.

Remedial Action Area and SVE Layout

Former Classic Cleaners
Cascade Plaza
Everett, Washington

Apex Companies, LLC 801 NW 42nd Street, #204 Seattle, Washington	Project Number: REGEN-611	Drawn: JP	Approved: AU	Figure 7
	August 2023			

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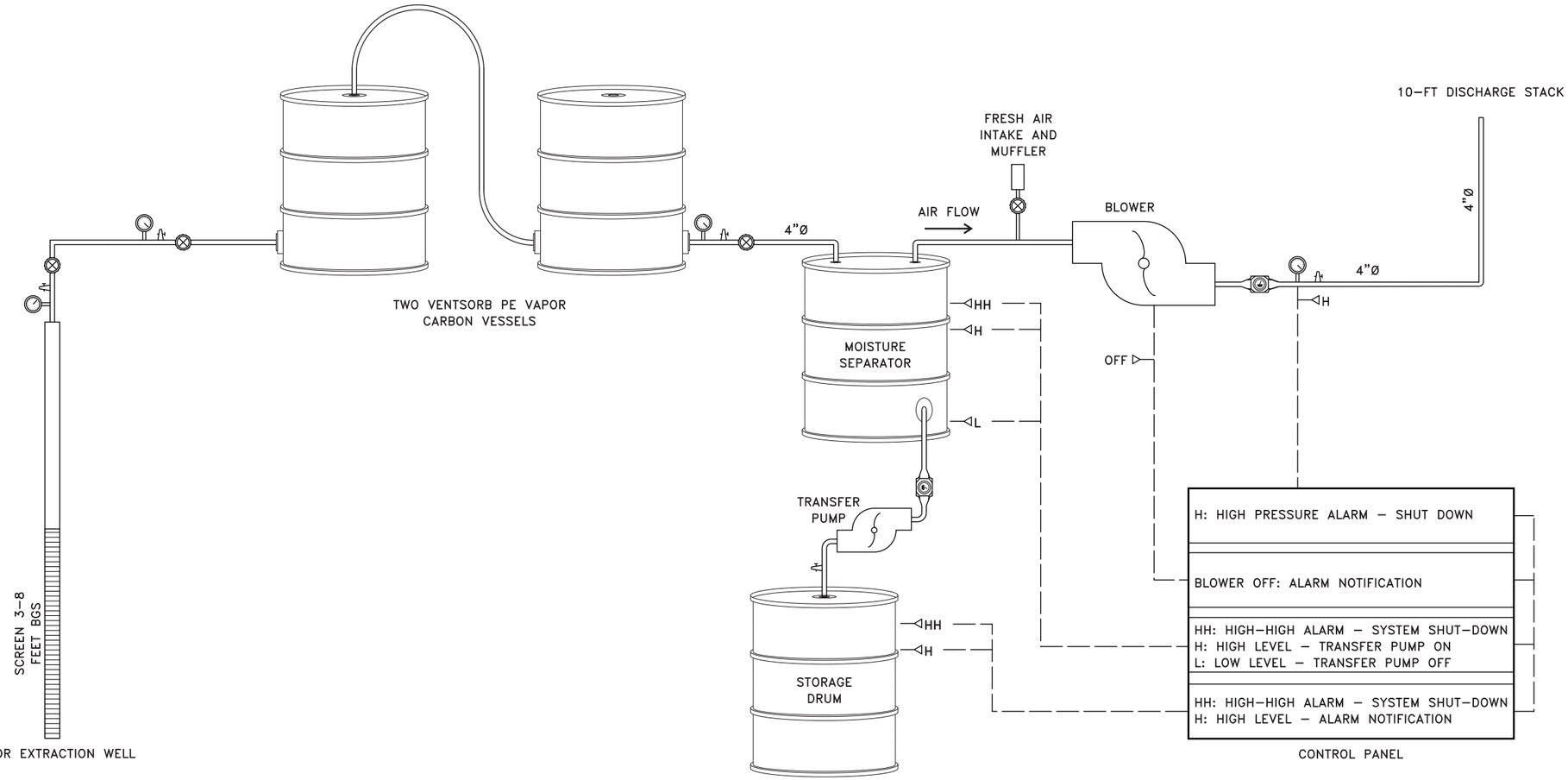
DRAFT



LEGEND:

- FLOW METER
- PRESSURE GAUGE
- SAMPLE PORT
- FLOW CONTROL VALVE
- SYSTEM CONTROL INPUT
- 4"Ø PIPE DIAMETER, IN INCHES

EQUIPMENT NOTES:

1. MOISTURE SEPARATOR = MINIMUM 40–GALLON VESSEL WITH INTRINSIC SECONDARY CONTAINMENT AND VISUAL INDICATION OF INTERSTITIAL FLUIDS.
2. BLOWER = ENVIRONMENTAL–GRADE REGENERATIVE BLOWER CAPABLE OF MINIMUM 70 CFM AT VACUUM PRESSURE OF 30 INCHES OF WATER (GAUGE PRESSURE) – ROTRON EN–404.
3. CARBON VESSELS = TWO(2) 75–GALLON VENTSORB PE VAPOR CARBON VESSELS (OR EQUIVALENT) CONNECTED IN SERIES.
4. MAXIMUM OPERATING NOISE LEVEL = 60 DBA AT A DISTANCE OF 10 FEET.
5. TRANSFER PUMP = SELF–PRIMING CENTRIFUGAL WATER PUMP (NOMINAL 0.25HP, 10 GPM)

8/3/2023

SVE System Schematic

Former Classic Cleaners
Cascade Plaza
Everett, Washington

Apex Companies, LLC
801 NW 42nd Street, #204
Seattle, Washington

Project Number:	Drawn:	Approved:	Figure
REGEN-611	JP	AU	8

August 2023

I:\Client\Regency\REGEN-611 Cascade Plaza SVE\2023 SVE Installation Report\REGEN-611 08 (System Schematic - Cascade).des

Appendix A

Boring Logs and Well Construction Documentation

Sample Descriptions

Classification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, and grain size, and should not be construed to imply field nor laboratory testing unless presented herein. Visual-manual classification methods of ASTM D 2488 were used as an identification guide.

Soil descriptions consist of the following:
MAJOR CONSTITUENT with additional remarks; color, moisture, minor constituents, density/consistency.

Density/Consistency

Soil density/consistency in borings is related primarily to the Standard Penetration Resistance. Soil density/consistency in test pits and push probe explorations is estimated based on visual observation and is presented parenthetically on test pit and push probe exploration logs.

SAND and GRAVEL Density	Standard Penetration Resistance in Blows/Foot
Very loose	0 - 4
Loose	4 - 10
Medium dense	10 - 30
Dense	30 - 50
Very dense	>50

SILT or CLAY Density	Standard Penetration Resistance in Blows/Foot	Approximate Shear Strength in TSF
Very soft	0 - 2	<0.125
Soft	2 - 4	0.125 - 0.25
Medium stiff	4 - 8	0.25 - 0.5
Stiff	8 - 15	0.5 - 1.0
Very Stiff	15 - 30	1.0 - 2.0
Hard	>30	>2.0

Moisture

Dry	Little perceptible moisture.
Sl. Moist	Some perceptible moisture, probably below optimum.
Moist	Probably near optimum moisture content.
Wet	Much perceptible moisture, probably above optimum.

Minor Constituents

	Estimated Percentage
Not identified in description	0 - 5
Slightly (clayey, silty, etc.)	5 - 12
Clayey, silty, sandy, gravelly	12 - 30
Very (clayey, silty, etc.)	30 - 50

Sampling Symbols

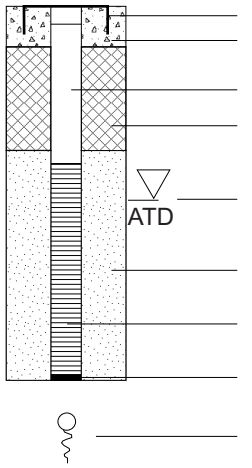
BORING AND PUSH-PROBE SYMBOLS

- Recovery
- No Recovery
- Temporarily Screened Interval
- PID — Photoionization Detector Reading
- W — Water Sample
- Sample Submitted for Chemical Analysis
- NS — No Sheen
- SS — Slight Sheen
- MS — Moderate Sheen
- HS — Heavy Sheen
- BF — Biogenic Film

TEST PIT SOIL SAMPLES

- Grab (Jar)
- Bag
- Shelby Tube

Groundwater Observations and Monitoring Well Construction



- Flush Mounted Monument
- Concrete Surface Seal
- Well Casing
- Bentonite Seal
- Groundwater Level on Date or (ATD) At Time of Drilling
- Sand Pack
- Well Screen
- End Cap
- Groundwater Seepage (Test Pits)

Key to Exploration Logs

Former Cascade Cleaners
Cascade Plaza
Everett, Washington

Apex Companies, LLC
600 Stewart Street, #400
Seattle, Washington 98101

Project Number:	Drawn:	Approved:	Figure
REGEN-520	JP	JX	Key
May 2021			

Apex Companies, LLC
600 Stewart Street, #400
Seattle, Washington 98101

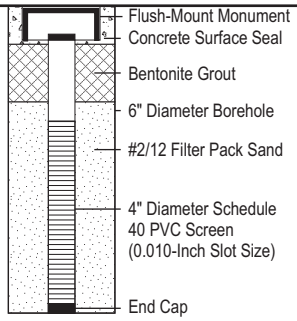
Former Cascade Cleaners
Cascade Plaza
Everett, Washington

Boring Number: SVE-1

Project Number: **REGEN-520**
Logged By: J. Guillotte
Date: November 20, 2020
Site Conditions: Clear, Cool
Drilling Contractor: Cascade Drilling
Drilling Equipment: Vac Truck
Sampler Type: Hand Auger
Depth to Water (ATD): --
Surface Elevation: Not Measured

Depth, feet	Core Interval/Recovery	Laboratory Sample ID	PID	Sheen	Lithologic Description
	Hand Auger	SVE-1-(5')	<5	NS	Ceramic tile on concrete over sandy SILT; light brown, fine to medium-grained.
5		SVE-1-(8')	<5	NS	Encountered marble-sized gravel.
			<5	NS	Becomes reddish light brown.
			<5	NS	10% gravel.
10					Bottom of Boring at 8.0' BGS.

Boring Details and Notes:

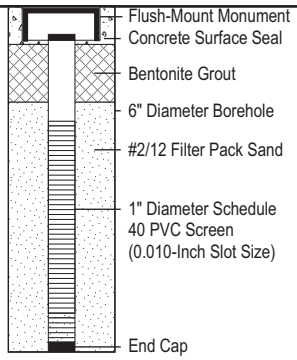


Boring Number: OBS-1

Logged By: J. Guillotte
Date: November 20, 2020
Site Conditions: Overcast. Cool
Drilling Contractor: Cascade Drilling
Drilling Equipment: Vac Truck, HSA
Sampler Type: Hand Auger
Depth to Water (ATD): --
Surface Elevation: Not Measured

Depth, feet	Core Interval/Recovery	Laboratory Sample ID	PID	Sheen	Lithologic Description
	Hand Auger	OBS-1-(5')	<5	NS	Asphalt over silty SAND; medium to dark brown, fine-granied.
5		OBS-1-(9')	<5	NS	Becomes medium brown-red.
			<5	NS	
			<5	NS	Silty SAND (FILL); light gray, medium to fine-grained. 25% gravel.
10					Bottom of Boring at 9.0' BGS.

Boring Details and Notes:



Apex Companies, LLC
600 Stewart Street, #400
Seattle, Washington 98101

Former Cascade Cleaners
Cascade Plaza
Everett, Washington

Boring Number: SB-1

Project Number: **REGEN-520**
Logged By: H. Hiscox
Date: May 14, 2021
Site Conditions: --
Drilling Contractor: Cascade Drilling
Drilling Equipment: Geoprobe
Sampler Type: --
Depth to Water (ATD): --
Surface Elevation: Not Measured

Boring Details and Notes:

Depth, feet	Core Interval/Recovery	Laboratory Sample ID	PID	Sheen	Lithologic Description
		SB-1-(2')	<5	NS	Concrete (4") over sandy CLAY; dark brown/dark red, dry, fine to medium-grained.
5		SB-1-(6')	<5	NS	Silty CLAY; dark brown, slightly moist, fine-grained.
		SB-1-(8')	<5	NS	Sandy CLAY; dark brown, dry, fine-grained.
10					Bottom of Boring at 10.0' BGS.
15					

Appendix B

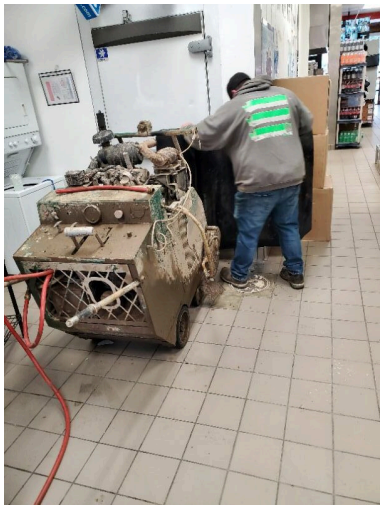
SVE System Photolog

Site Photographs - 12/02/2021
Apex Companies, LLC Everett, Washington

Photograph	1
Description:	Position of sve system and carbon before installation

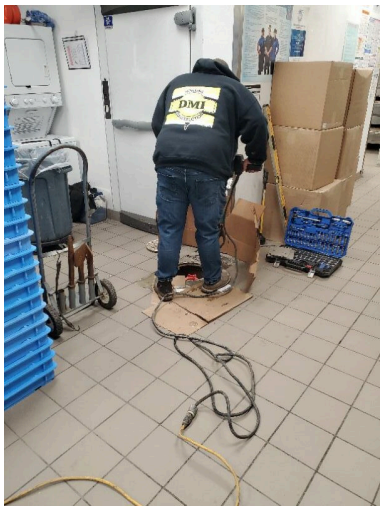
Photograph	2
Description:	Floor around sve well prior to trenching

Photograph	3
Description:	Cutting concrete around sve well for trench



Photograph	4
Description:	Tile cut for trenching

Photograph	5
Description:	Breaking concrete around sve well



Photograph	6
Description:	Removing soil from trench 1 foot below the concrete bottom

Photograph	7
Description:	Sve-1 trench and piping going up the wall, (nothing attached to the freezer door)

Photograph	8
Description:	Cones around the trenches area

Photograph	9
Description:	Concrete poured and new well box around the surrounding area

Photograph	10
Description:	Pve piping coming out of dominos attached to outside of door, and going to sve system.

Photograph	11
Description:	Piping along sve system side

Photograph	12
Description:	Tubing connecting carbon to sve system, the tub attaching to the sve system will be connected once temporary fence is down

Photograph	13
Description:	Temporary fencing up around system facing southwest

Photograph	14
Description:	Temporary fencing up with dominos door completely openinh

Photograph	15
Description:	View facing north of system and fence

Photograph	16
Description:	View facing west of SVE system with caution tape and cone up around temporary fencing

Photograph	
Description:	

Photograph	
Description:	

Appendix C

Laboratory Reports

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

December 02, 2020

Apex Companies, LLC - Portland, OR

Sample Delivery Group:	L1289130
Samples Received:	11/21/2020
Project Number:	REGEN-520
Description:	Cascade Cleaners

Report To:

Jie Xu
600 Stewart St.
Ste 400
Seattle, WA 98101

Entire Report Reviewed By:

Brian Ford
Project Manager

TABLE OF CONTENTS

SVE-1-(5') L1289130-01 Solid

Collected by: J. Guillotte
Collected date/time: 11/20/20 03:12
Received date/time: 11/21/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1584500	1	12/01/20 23:29	12/01/20 23:38	KBC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1584264	1	11/20/20 03:12	11/30/20 21:20	BMB	Mt. Juliet, TN

OBS-1-(5') L1289130-02 Solid

Collected by: J. Guillotte
Collected date/time: 11/20/20 07:20
Received date/time: 11/21/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1584500	1	12/01/20 23:29	12/01/20 23:38	KBC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1584264	1	11/20/20 07:20	11/30/20 21:39	BMB	Mt. Juliet, TN

SVE-1-(8') L1289130-05 Solid

Collected by: J. Guillotte
Collected date/time: 11/20/20 04:00
Received date/time: 11/21/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1584500	1	12/01/20 23:29	12/01/20 23:38	KBC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1584264	1	11/20/20 04:00	11/30/20 21:57	BMB	Mt. Juliet, TN

OBS-1-(9') L1289130-06 Solid

Collected by: J. Guillotte
Collected date/time: 11/20/20 07:55
Received date/time: 11/21/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1584500	1	12/01/20 23:29	12/01/20 23:38	KBC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1584264	1	11/20/20 07:55	11/30/20 22:16	BMB	Mt. Juliet, TN

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

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.8		1	12/01/2020 23:38	WG1584500

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
cis-1,2-Dichloroethene	U		0.000890	0.00303	1	11/30/2020 21:20	WG1584264
Tetrachloroethene	0.0758	C5	0.00109	0.00303	1	11/30/2020 21:20	WG1584264
Trichloroethene	U		0.000708	0.00121	1	11/30/2020 21:20	WG1584264
Vinyl chloride	U		0.00141	0.00303	1	11/30/2020 21:20	WG1584264
(S) Toluene-d8	*103*			*75.0-131*		*11/30/2020 21:20*	WG1584264
(S) 4-Bromofluorobenzene	*109*			*67.0-138*		*11/30/2020 21:20*	WG1584264
(S) 1,2-Dichloroethane-d4	*91.6*			*70.0-130*		*11/30/2020 21:20*	WG1584264

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	76.1		1	12/01/2020 23:38	WG1584500

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
cis-1,2-Dichloroethene	U		0.00122	0.00415	1	11/30/2020 21:39	WG1584264
Tetrachloroethene	0.143	C5	0.00149	0.00415	1	11/30/2020 21:39	WG1584264
Trichloroethene	U		0.000970	0.00166	1	11/30/2020 21:39	WG1584264
Vinyl chloride	U		0.00193	0.00415	1	11/30/2020 21:39	WG1584264
(S) Toluene-d8	*101*			*75.0-131*		*11/30/2020 21:39*	WG1584264
(S) 4-Bromofluorobenzene	*109*			*67.0-138*		*11/30/2020 21:39*	WG1584264
(S) 1,2-Dichloroethane-d4	*91.6*			*70.0-130*		*11/30/2020 21:39*	WG1584264

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.5		1	12/01/2020 23:38	WG1584500

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
cis-1,2-Dichloroethene	U		0.000845	0.00288	1	11/30/2020 21:57	WG1584264
Tetrachloroethene	0.0523	C5	0.00103	0.00288	1	11/30/2020 21:57	WG1584264
Trichloroethene	U		0.000672	0.00115	1	11/30/2020 21:57	WG1584264
Vinyl chloride	U		0.00134	0.00288	1	11/30/2020 21:57	WG1584264
(S) Toluene-d8	*102*			*75.0-131*		*11/30/2020 21:57*	WG1584264
(S) 4-Bromofluorobenzene	*109*			*67.0-138*		*11/30/2020 21:57*	WG1584264
(S) 1,2-Dichloroethane-d4	*91.3*			*70.0-130*		*11/30/2020 21:57*	WG1584264

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.6		1	12/01/2020 23:38	WG1584500

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
cis-1,2-Dichloroethene	U		0.000870	0.00296	1	11/30/2020 22:16	WG1584264
Tetrachloroethene	0.00956	C5	0.00106	0.00296	1	11/30/2020 22:16	WG1584264
Trichloroethene	U		0.000692	0.00118	1	11/30/2020 22:16	WG1584264
Vinyl chloride	U		0.00137	0.00296	1	11/30/2020 22:16	WG1584264
(S) Toluene-d8	*104*			*75.0-131*		*11/30/2020 22:16*	WG1584264
(S) 4-Bromofluorobenzene	*112*			*67.0-138*		*11/30/2020 22:16*	WG1584264
(S) 1,2-Dichloroethane-d4	*92.7*			*70.0-130*		*11/30/2020 22:16*	WG1584264

Method Blank (MB)

(MB) R3599386-1 12/01/20 23:38

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

L1289128-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1289128-01 12/01/20 23:38 • (DUP) R3599386-3 12/01/20 23:38

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	80.7	81.1	1	0.524		10

Laboratory Control Sample (LCS)

(LCS) R3599386-2 12/01/20 23:38

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) R3598789-2 11/30/20 15:11

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
cis-1,2-Dichloroethene	U		0.000734	0.00250
Tetrachloroethene	U		0.000896	0.00250
Trichloroethene	U		0.000584	0.00100
Vinyl chloride	U		0.00116	0.00250
(S) Toluene-d8	*101*			*75.0-131*
(S) 4-Bromofluorobenzene	*108*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*91.6*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3598789-1 11/30/20 14:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
cis-1,2-Dichloroethene	0.125	0.128	102	73.0-125	
Tetrachloroethene	0.125	0.164	131	70.0-136	
Trichloroethene	0.125	0.152	122	76.0-126	
Vinyl chloride	0.125	0.120	96.0	63.0-134	
(S) Toluene-d8			*104*	*75.0-131*	
(S) 4-Bromofluorobenzene			*107*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*91.3*	*70.0-130*	

L1290253-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1290253-06 11/30/20 18:30 • (MS) R3598789-3 11/30/20 23:13 • (MSD) R3598789-4 11/30/20 23:32

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 %
cis-1,2-Dichloroethene	0.102	U	0.127	0.119	125	117	1	10.0-149			6.50	37
Tetrachloroethene	0.102	U	0.173	0.162	170	159	1	10.0-156	J5	J5	6.57	39
Trichloroethene	0.102	U	0.159	0.147	156	144	1	10.0-156			7.84	38
Vinyl chloride	0.102	U	0.114	0.112	112	110	1	10.0-160			1.77	37
(S) Toluene-d8					*100*	*101*		*75.0-131*				
(S) 4-Bromofluorobenzene					*111*	*113*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*92.8*	*91.3*		*70.0-130*				

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.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

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.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
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
C5	The reported concentration is an estimate. The continuing calibration standard associated with this data responded high. Data is likely to show a high bias concerning the result.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.

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	T104704245-18-15
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

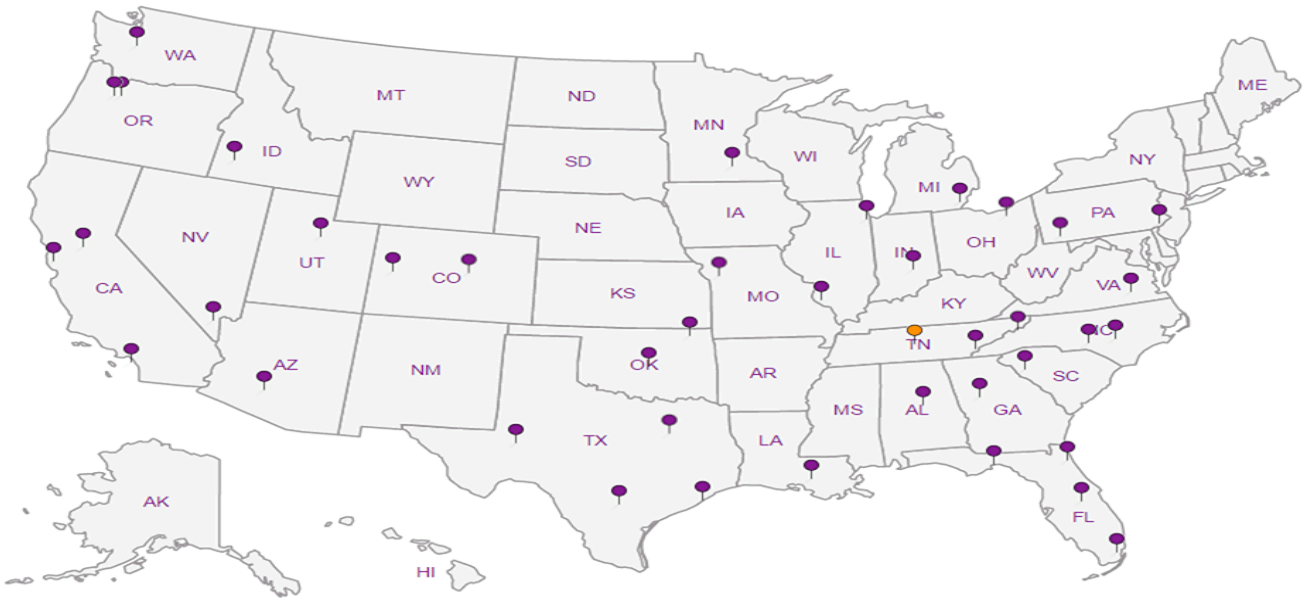
Third Party Federal Accreditations

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.



Apex Companies, LLC - Portland, OR 600 Stewart St. Ste 400 Seattle, WA 98101	Billing Information: Accounts Payable 3015 SW First Ave. Portland, OR 97201-4707	Pres Chk

Analysis / Container / Preservative

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

Report to: Jie Xu	Email To: Jie.Xu@apexcos.com;kelsi.evans@apexcos.com;
Project Description: CASCADE CLEANERS	City/State Collected: EVERETT — Please Circle: PT MT CT ET
Phone: 503-924-4704	Client Project #: REGEN-520 — Lab Project #: ASHCREPOR-CASCADE
Collected by (print): J GUILLOTTE	Site/Facility ID # — P.O. #: Regen-520
Collected by (signature): [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 # — Date Results Needed
Immediately Packed on Ice N ___ Y X	

SDG # L289130
F217

Acctnum: ASHCREPOR
Template: T177269
Prelogin: P808178
PM: 110 - Brian Ford
PB:
Shipped Via: FEDEX

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	1 VOCs 8260D* 2ozClr-NoPres	1 VOCs 8260D* 40mlAmb/MeOH10ml/Syr	Remarks	Sample # (lab only)
SVE-1-(5')	G	SS	5'	11/20/22	0312	2	X	X		-01
SVE-1-(8')	G	SS	8'	"	0400	2	X	X	HOLD	
OBS-1-(5')	G	SS	5'	|	0720	2	X	X		-02
OBS-1-(9')	G	SS	9'	|	0755	2	X	X	HOLD	
		SS								
		SS								
		SS								
		SS								

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

Remarks:*VOCs 8260D: PCE, trichloroethene [TCE], cis-1,2- dichloroethylene [DCE], and vinyl chloride only.

pH _______ Temp _______
Flow _______ Other _______

Samples returned via:
__ UPS __ FedEx __ Courier ___________

Tracking # 915987806655

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
RAD Screen <0.5 mR/hr: ✓Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	
[signature]	11/20/22	1000		Trip Blank Received: Yes / No (circled) HCL / MeOH TBR
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 2.2-1=2.1 °C — Bottles Received: 8
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 11 21 20 — Time: 0900

If preservation required by Login: Date/Time

11-187

Condition: NCF / OK

L1289130 ASHCREPOR add off hold

R5

Please add to L1289130, do not create a new SDG. Hold#11-187.

V8260C, TS, TERRACORE
SVE-1-(8')
OBS-1-(9')

Time estimate: oh **Time spent:** oh

Members

Brian Ford

ANALYTICAL REPORT

May 18, 2021

Apex Companies, LLC - Portland, OR

Sample Delivery Group:	L1353606
Samples Received:	05/15/2021
Project Number:	REGEN-250
Description:	Cascade

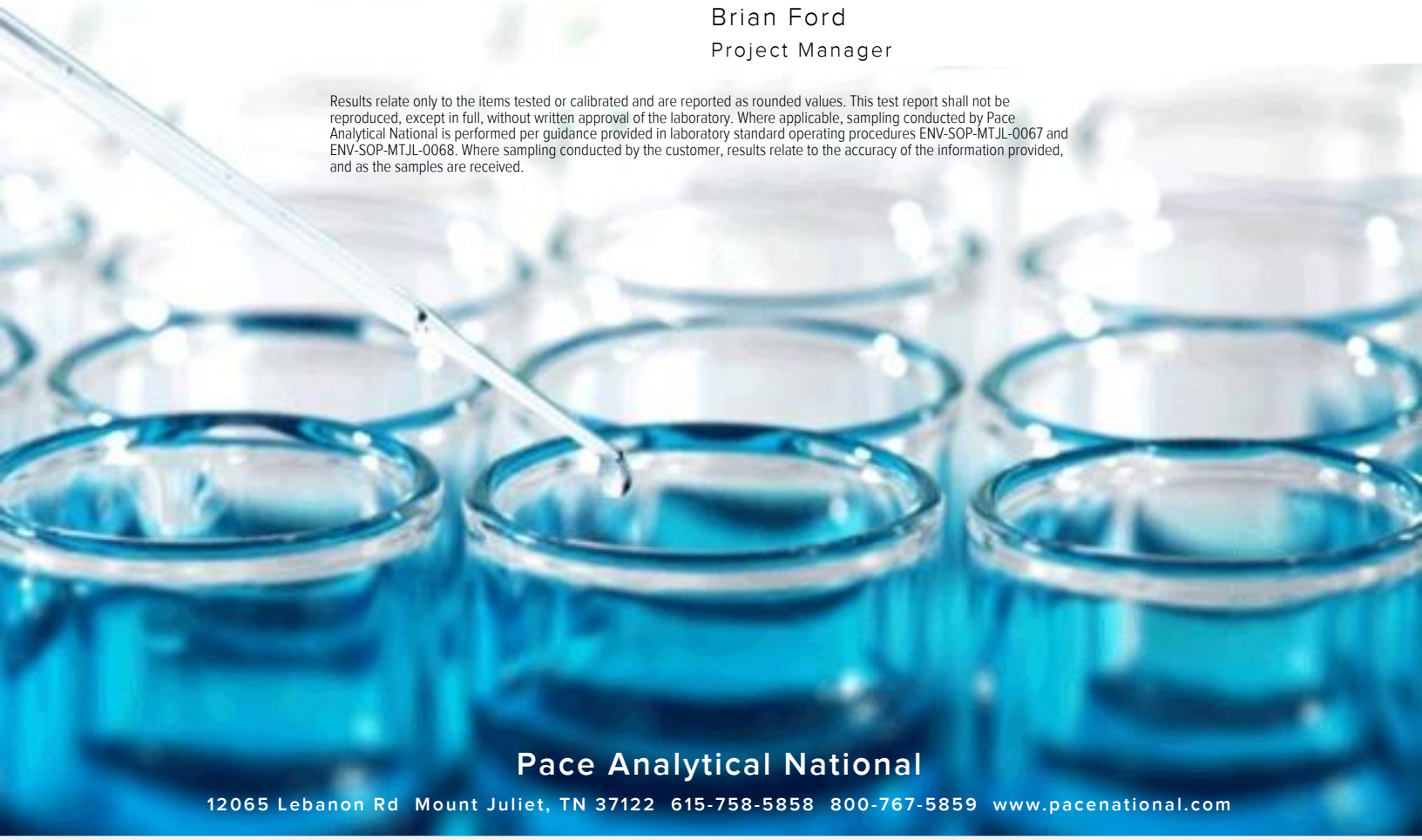
Report To:

Jie Xu
600 Stewart St.
Ste 400
Seattle, WA 98101

Entire Report Reviewed By:

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 Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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SAMPLE SUMMARY

SB-1-2 L1353606-01 Solid

Collected by: H Hiscox
Collected date/time: 05/14/21 09:30
Received date/time: 05/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1671809	1	05/17/21 10:17	05/17/21 10:27	KDW	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1672295	1	05/17/21 20:47	05/17/21 22:09	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1672625	1	05/14/21 09:30	05/18/21 13:52	JAH	Mt. Juliet, TN

SB-1-5 L1353606-02 Solid

Collected by: H Hiscox
Collected date/time: 05/14/21 09:35
Received date/time: 05/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1671809	1	05/17/21 10:17	05/17/21 10:27	KDW	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1672295	1	05/17/21 20:47	05/17/21 22:28	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1672625	1	05/14/21 09:35	05/18/21 12:36	JAH	Mt. Juliet, TN

SB-1-8 L1353606-03 Solid

Collected by: H Hiscox
Collected date/time: 05/14/21 09:40
Received date/time: 05/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1671809	1	05/17/21 10:17	05/17/21 10:27	KDW	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1672295	1	05/14/21 09:40	05/17/21 22:47	DWR	Mt. Juliet, TN

CASE NARRATIVE

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

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.0		1	05/17/2021 10:27	WG1671809

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Acetone	U	C3 J3	0.0410	0.0562	1	05/17/2021 22:09	WG1672295
Acrylonitrile	U	J3	0.00406	0.0140	1	05/17/2021 22:09	WG1672295
Benzene	U		0.000525	0.00112	1	05/17/2021 22:09	WG1672295
Bromobenzene	U		0.00101	0.0140	1	05/17/2021 22:09	WG1672295
Bromodichloromethane	U		0.000814	0.00281	1	05/17/2021 22:09	WG1672295
Bromoform	U		0.00131	0.0281	1	05/17/2021 22:09	WG1672295
Bromomethane	U		0.00221	0.0140	1	05/17/2021 22:09	WG1672295
n-Butylbenzene	U		0.00590	0.0140	1	05/17/2021 22:09	WG1672295
sec-Butylbenzene	U		0.00324	0.0140	1	05/17/2021 22:09	WG1672295
tert-Butylbenzene	U		0.00219	0.00562	1	05/17/2021 22:09	WG1672295
Carbon tetrachloride	U		0.00101	0.00562	1	05/17/2021 22:09	WG1672295
Chlorobenzene	U		0.000236	0.00281	1	05/17/2021 22:09	WG1672295
Chlorodibromomethane	U		0.000687	0.00281	1	05/17/2021 22:09	WG1672295
Chloroethane	U		0.00191	0.00562	1	05/17/2021 22:09	WG1672295
Chloroform	U		0.00116	0.00281	1	05/17/2021 22:09	WG1672295
Chloromethane	U		0.00489	0.0140	1	05/17/2021 22:09	WG1672295
2-Chlorotoluene	U		0.000972	0.00281	1	05/17/2021 22:09	WG1672295
4-Chlorotoluene	U		0.000506	0.00562	1	05/17/2021 22:09	WG1672295
1,2-Dibromo-3-Chloropropane	U		0.00438	0.0281	1	05/17/2021 22:09	WG1672295
1,2-Dibromoethane	U		0.000728	0.00281	1	05/17/2021 22:09	WG1672295
Dibromomethane	U		0.000843	0.00562	1	05/17/2021 22:09	WG1672295
1,2-Dichlorobenzene	U		0.000477	0.00562	1	05/17/2021 22:09	WG1672295
1,3-Dichlorobenzene	U		0.000674	0.00562	1	05/17/2021 22:09	WG1672295
1,4-Dichlorobenzene	U		0.000786	0.00562	1	05/17/2021 22:09	WG1672295
Dichlorodifluoromethane	U		0.00181	0.00281	1	05/17/2021 22:09	WG1672295
1,1-Dichloroethane	U		0.000552	0.00281	1	05/17/2021 22:09	WG1672295
1,2-Dichloroethane	U		0.000729	0.00281	1	05/17/2021 22:09	WG1672295
1,1-Dichloroethene	U		0.000681	0.00281	1	05/17/2021 22:09	WG1672295
cis-1,2-Dichloroethene	U		0.000825	0.00281	1	05/17/2021 22:09	WG1672295
trans-1,2-Dichloroethene	U		0.00117	0.00562	1	05/17/2021 22:09	WG1672295
1,2-Dichloropropane	U		0.00160	0.00562	1	05/17/2021 22:09	WG1672295
1,1-Dichloropropene	U		0.000909	0.00281	1	05/17/2021 22:09	WG1672295
1,3-Dichloropropane	U		0.000563	0.00562	1	05/17/2021 22:09	WG1672295
cis-1,3-Dichloropropene	U		0.000850	0.00281	1	05/17/2021 22:09	WG1672295
trans-1,3-Dichloropropene	U		0.00128	0.00562	1	05/17/2021 22:09	WG1672295
2,2-Dichloropropane	U		0.00155	0.00281	1	05/17/2021 22:09	WG1672295
Di-isopropyl ether	U		0.000461	0.00112	1	05/17/2021 22:09	WG1672295
Ethylbenzene	U		0.000828	0.00281	1	05/17/2021 22:09	WG1672295
Hexachloro-1,3-butadiene	U	C3	0.00674	0.0281	1	05/17/2021 22:09	WG1672295
Isopropylbenzene	U		0.000477	0.00281	1	05/17/2021 22:09	WG1672295
p-Isopropyltoluene	U		0.00286	0.00562	1	05/17/2021 22:09	WG1672295
2-Butanone (MEK)	U		0.0713	0.112	1	05/17/2021 22:09	WG1672295
Methylene Chloride	U		0.00746	0.0281	1	05/17/2021 22:09	WG1672295
4-Methyl-2-pentanone (MIBK)	U		0.00256	0.0281	1	05/17/2021 22:09	WG1672295
Methyl tert-butyl ether	U		0.000393	0.00112	1	05/17/2021 22:09	WG1672295
Naphthalene	U	J4	0.00616	0.0158	1	05/18/2021 13:52	WG1672625
n-Propylbenzene	U		0.00107	0.00562	1	05/17/2021 22:09	WG1672295
Styrene	U		0.000257	0.0140	1	05/17/2021 22:09	WG1672295
1,1,1,2-Tetrachloroethane	U		0.00106	0.00281	1	05/17/2021 22:09	WG1672295
1,1,2,2-Tetrachloroethane	U		0.000781	0.00281	1	05/17/2021 22:09	WG1672295

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

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

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,1,2-Trichlorotrifluoroethane	U		0.000847	0.00281	1	05/17/2021 22:09	WG1672295
Tetrachloroethene	0.00380		0.00101	0.00281	1	05/17/2021 22:09	WG1672295
Toluene	U		0.00146	0.00562	1	05/17/2021 22:09	WG1672295
1,2,3-Trichlorobenzene	U	C4 J4	0.00823	0.0140	1	05/17/2021 22:09	WG1672295
1,2,4-Trichlorobenzene	U	C3	0.00494	0.0140	1	05/17/2021 22:09	WG1672295
1,1,1-Trichloroethane	U		0.00104	0.00281	1	05/17/2021 22:09	WG1672295
1,1,2-Trichloroethane	U		0.000671	0.00281	1	05/17/2021 22:09	WG1672295
Trichloroethene	U		0.000656	0.00112	1	05/17/2021 22:09	WG1672295
Trichlorofluoromethane	U	C3	0.000929	0.00281	1	05/17/2021 22:09	WG1672295
1,2,3-Trichloropropane	U		0.00182	0.0140	1	05/17/2021 22:09	WG1672295
1,2,4-Trimethylbenzene	0.00261	J	0.00199	0.00631	1	05/18/2021 13:52	WG1672625
1,2,3-Trimethylbenzene	U	C3 J4	0.00177	0.00562	1	05/17/2021 22:09	WG1672295
1,3,5-Trimethylbenzene	U		0.00253	0.00631	1	05/18/2021 13:52	WG1672625
Vinyl chloride	U		0.00130	0.00281	1	05/17/2021 22:09	WG1672295
Xylenes, Total	U		0.000989	0.00730	1	05/17/2021 22:09	WG1672295
(S) Toluene-d8	*109*			*75.0-131*		*05/17/2021 22:09*	WG1672295
(S) Toluene-d8	*103*			*75.0-131*		*05/18/2021 13:52*	WG1672625
(S) 4-Bromofluorobenzene	*89.6*			*67.0-138*		*05/17/2021 22:09*	WG1672295
(S) 4-Bromofluorobenzene	*113*			*67.0-138*		*05/18/2021 13:52*	WG1672625
(S) 1,2-Dichloroethane-d4	*81.6*			*70.0-130*		*05/17/2021 22:09*	WG1672295
(S) 1,2-Dichloroethane-d4	*93.1*			*70.0-130*		*05/18/2021 13:52*	WG1672625

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	83.6		1	05/17/2021 10:27	WG1671809

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Acetone	U	C3 J3	0.0437	0.0598	1	05/17/2021 22:28	WG1672295
Acrylonitrile	U	J3	0.00432	0.0150	1	05/17/2021 22:28	WG1672295
Benzene	U		0.000559	0.00120	1	05/17/2021 22:28	WG1672295
Bromobenzene	U		0.00108	0.0150	1	05/17/2021 22:28	WG1672295
Bromodichloromethane	U		0.000868	0.00299	1	05/17/2021 22:28	WG1672295
Bromoform	U		0.00140	0.0299	1	05/17/2021 22:28	WG1672295
Bromomethane	U		0.00236	0.0150	1	05/17/2021 22:28	WG1672295
n-Butylbenzene	U		0.00628	0.0150	1	05/17/2021 22:28	WG1672295
sec-Butylbenzene	U		0.00345	0.0150	1	05/17/2021 22:28	WG1672295
tert-Butylbenzene	U		0.00233	0.00598	1	05/17/2021 22:28	WG1672295
Carbon tetrachloride	U		0.00107	0.00598	1	05/17/2021 22:28	WG1672295
Chlorobenzene	U		0.000251	0.00299	1	05/17/2021 22:28	WG1672295
Chlorodibromomethane	U		0.000732	0.00299	1	05/17/2021 22:28	WG1672295
Chloroethane	U		0.00203	0.00598	1	05/17/2021 22:28	WG1672295
Chloroform	U		0.00123	0.00299	1	05/17/2021 22:28	WG1672295
Chloromethane	U		0.00521	0.0150	1	05/17/2021 22:28	WG1672295
2-Chlorotoluene	U		0.00104	0.00299	1	05/17/2021 22:28	WG1672295
4-Chlorotoluene	U		0.000538	0.00598	1	05/17/2021 22:28	WG1672295
1,2-Dibromo-3-Chloropropane	U		0.00467	0.0299	1	05/17/2021 22:28	WG1672295
1,2-Dibromoethane	U		0.000775	0.00299	1	05/17/2021 22:28	WG1672295
Dibromomethane	U		0.000897	0.00598	1	05/17/2021 22:28	WG1672295
1,2-Dichlorobenzene	U		0.000509	0.00598	1	05/17/2021 22:28	WG1672295
1,3-Dichlorobenzene	U		0.000718	0.00598	1	05/17/2021 22:28	WG1672295
1,4-Dichlorobenzene	U		0.000838	0.00598	1	05/17/2021 22:28	WG1672295
Dichlorodifluoromethane	U		0.00193	0.00299	1	05/17/2021 22:28	WG1672295
1,1-Dichloroethane	U		0.000588	0.00299	1	05/17/2021 22:28	WG1672295
1,2-Dichloroethane	U		0.000777	0.00299	1	05/17/2021 22:28	WG1672295
1,1-Dichloroethene	U		0.000725	0.00299	1	05/17/2021 22:28	WG1672295
cis-1,2-Dichloroethene	U		0.000878	0.00299	1	05/17/2021 22:28	WG1672295
trans-1,2-Dichloroethene	U		0.00124	0.00598	1	05/17/2021 22:28	WG1672295
1,2-Dichloropropane	U		0.00170	0.00598	1	05/17/2021 22:28	WG1672295
1,1-Dichloropropene	U		0.000968	0.00299	1	05/17/2021 22:28	WG1672295
1,3-Dichloropropane	U		0.000599	0.00598	1	05/17/2021 22:28	WG1672295
cis-1,3-Dichloropropene	U		0.000906	0.00299	1	05/17/2021 22:28	WG1672295
trans-1,3-Dichloropropene	U		0.00136	0.00598	1	05/17/2021 22:28	WG1672295
2,2-Dichloropropane	U		0.00165	0.00299	1	05/17/2021 22:28	WG1672295
Di-isopropyl ether	U		0.000491	0.00120	1	05/17/2021 22:28	WG1672295
Ethylbenzene	U		0.000882	0.00299	1	05/17/2021 22:28	WG1672295
Hexachloro-1,3-butadiene	U	C3	0.00718	0.0299	1	05/17/2021 22:28	WG1672295
Isopropylbenzene	U		0.000509	0.00299	1	05/17/2021 22:28	WG1672295
p-Isopropyltoluene	U		0.00305	0.00598	1	05/17/2021 22:28	WG1672295
2-Butanone (MEK)	U		0.0760	0.120	1	05/17/2021 22:28	WG1672295
Methylene Chloride	U		0.00795	0.0299	1	05/17/2021 22:28	WG1672295
4-Methyl-2-pentanone (MIBK)	U		0.00273	0.0299	1	05/17/2021 22:28	WG1672295
Methyl tert-butyl ether	U		0.000419	0.00120	1	05/17/2021 22:28	WG1672295
Naphthalene	U	C3	0.00584	0.0150	1	05/17/2021 22:28	WG1672295
n-Propylbenzene	U		0.00114	0.00598	1	05/17/2021 22:28	WG1672295
Styrene	U		0.000274	0.0150	1	05/17/2021 22:28	WG1672295
1,1,1,2-Tetrachloroethane	U		0.00113	0.00299	1	05/17/2021 22:28	WG1672295
1,1,2,2-Tetrachloroethane	U		0.000832	0.00299	1	05/17/2021 22:28	WG1672295

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

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,1,2-Trichlorotrifluoroethane	U		0.000902	0.00299	1	05/17/2021 22:28	WG1672295
Tetrachloroethene	U		0.00107	0.00299	1	05/17/2021 22:28	WG1672295
Toluene	U		0.00156	0.00598	1	05/17/2021 22:28	WG1672295
1,2,3-Trichlorobenzene	U	C4 J4	0.00877	0.0150	1	05/17/2021 22:28	WG1672295
1,2,4-Trichlorobenzene	U	C3	0.00526	0.0150	1	05/17/2021 22:28	WG1672295
1,1,1-Trichloroethane	U		0.00110	0.00299	1	05/17/2021 22:28	WG1672295
1,1,2-Trichloroethane	U		0.000714	0.00299	1	05/17/2021 22:28	WG1672295
Trichloroethene	U		0.000699	0.00120	1	05/17/2021 22:28	WG1672295
Trichlorofluoromethane	U	C3	0.000990	0.00299	1	05/17/2021 22:28	WG1672295
1,2,3-Trichloropropane	U		0.00194	0.0150	1	05/17/2021 22:28	WG1672295
1,2,4-Trimethylbenzene	U		0.00228	0.00722	1	05/18/2021 12:36	WG1672625
1,2,3-Trimethylbenzene	U	C3 J4	0.00189	0.00598	1	05/17/2021 22:28	WG1672295
1,3,5-Trimethylbenzene	U		0.00239	0.00598	1	05/17/2021 22:28	WG1672295
Vinyl chloride	U		0.00139	0.00299	1	05/17/2021 22:28	WG1672295
Xylenes, Total	U		0.00105	0.00778	1	05/17/2021 22:28	WG1672295
(S) Toluene-d8	*107*			*75.0-131*		*05/17/2021 22:28*	WG1672295
(S) Toluene-d8	*103*			*75.0-131*		*05/18/2021 12:36*	WG1672625
(S) 4-Bromofluorobenzene	*89.8*			*67.0-138*		*05/17/2021 22:28*	WG1672295
(S) 4-Bromofluorobenzene	*110*			*67.0-138*		*05/18/2021 12:36*	WG1672625
(S) 1,2-Dichloroethane-d4	*84.3*			*70.0-130*		*05/17/2021 22:28*	WG1672295
(S) 1,2-Dichloroethane-d4	*98.6*			*70.0-130*		*05/18/2021 12:36*	WG1672625

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	80.7		1	05/17/2021 10:27	WG1671809

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Acetone	U	C3 J3	0.0553	0.0757	1	05/17/2021 22:47	WG1672295
Acrylonitrile	U	J3	0.00547	0.0189	1	05/17/2021 22:47	WG1672295
Benzene	U		0.000707	0.00151	1	05/17/2021 22:47	WG1672295
Bromobenzene	U		0.00136	0.0189	1	05/17/2021 22:47	WG1672295
Bromodichloromethane	U		0.00110	0.00378	1	05/17/2021 22:47	WG1672295
Bromoform	U		0.00177	0.0378	1	05/17/2021 22:47	WG1672295
Bromomethane	U		0.00298	0.0189	1	05/17/2021 22:47	WG1672295
n-Butylbenzene	U		0.00795	0.0189	1	05/17/2021 22:47	WG1672295
sec-Butylbenzene	U		0.00436	0.0189	1	05/17/2021 22:47	WG1672295
tert-Butylbenzene	U		0.00295	0.00757	1	05/17/2021 22:47	WG1672295
Carbon tetrachloride	U		0.00136	0.00757	1	05/17/2021 22:47	WG1672295
Chlorobenzene	U		0.000318	0.00378	1	05/17/2021 22:47	WG1672295
Chlorodibromomethane	U		0.000927	0.00378	1	05/17/2021 22:47	WG1672295
Chloroethane	U		0.00257	0.00757	1	05/17/2021 22:47	WG1672295
Chloroform	U		0.00156	0.00378	1	05/17/2021 22:47	WG1672295
Chloromethane	U		0.00659	0.0189	1	05/17/2021 22:47	WG1672295
2-Chlorotoluene	U		0.00131	0.00378	1	05/17/2021 22:47	WG1672295
4-Chlorotoluene	U		0.000681	0.00757	1	05/17/2021 22:47	WG1672295
1,2-Dibromo-3-Chloropropane	U		0.00590	0.0378	1	05/17/2021 22:47	WG1672295
1,2-Dibromoethane	U		0.000981	0.00378	1	05/17/2021 22:47	WG1672295
Dibromomethane	U		0.00114	0.00757	1	05/17/2021 22:47	WG1672295
1,2-Dichlorobenzene	U		0.000643	0.00757	1	05/17/2021 22:47	WG1672295
1,3-Dichlorobenzene	U		0.000908	0.00757	1	05/17/2021 22:47	WG1672295
1,4-Dichlorobenzene	U		0.00106	0.00757	1	05/17/2021 22:47	WG1672295
Dichlorodifluoromethane	U		0.00244	0.00378	1	05/17/2021 22:47	WG1672295
1,1-Dichloroethane	U		0.000743	0.00378	1	05/17/2021 22:47	WG1672295
1,2-Dichloroethane	U		0.000983	0.00378	1	05/17/2021 22:47	WG1672295
1,1-Dichloroethene	U		0.000917	0.00378	1	05/17/2021 22:47	WG1672295
cis-1,2-Dichloroethene	U		0.00111	0.00378	1	05/17/2021 22:47	WG1672295
trans-1,2-Dichloroethene	U		0.00157	0.00757	1	05/17/2021 22:47	WG1672295
1,2-Dichloropropane	U		0.00215	0.00757	1	05/17/2021 22:47	WG1672295
1,1-Dichloropropene	U		0.00122	0.00378	1	05/17/2021 22:47	WG1672295
1,3-Dichloropropane	U		0.000758	0.00757	1	05/17/2021 22:47	WG1672295
cis-1,3-Dichloropropene	U		0.00115	0.00378	1	05/17/2021 22:47	WG1672295
trans-1,3-Dichloropropene	U		0.00173	0.00757	1	05/17/2021 22:47	WG1672295
2,2-Dichloropropane	U		0.00209	0.00378	1	05/17/2021 22:47	WG1672295
Di-isopropyl ether	U		0.000621	0.00151	1	05/17/2021 22:47	WG1672295
Ethylbenzene	U		0.00112	0.00378	1	05/17/2021 22:47	WG1672295
Hexachloro-1,3-butadiene	U	C3	0.00908	0.0378	1	05/17/2021 22:47	WG1672295
Isopropylbenzene	U		0.000643	0.00378	1	05/17/2021 22:47	WG1672295
p-Isopropyltoluene	U		0.00386	0.00757	1	05/17/2021 22:47	WG1672295
2-Butanone (MEK)	0.107	J	0.0961	0.151	1	05/17/2021 22:47	WG1672295
Methylene Chloride	U		0.0101	0.0378	1	05/17/2021 22:47	WG1672295
4-Methyl-2-pentanone (MIBK)	U		0.00345	0.0378	1	05/17/2021 22:47	WG1672295
Methyl tert-butyl ether	U		0.000530	0.00151	1	05/17/2021 22:47	WG1672295
Naphthalene	U	C3	0.00739	0.0189	1	05/17/2021 22:47	WG1672295
n-Propylbenzene	U		0.00144	0.00757	1	05/17/2021 22:47	WG1672295
Styrene	U		0.000347	0.0189	1	05/17/2021 22:47	WG1672295
1,1,1,2-Tetrachloroethane	U		0.00144	0.00378	1	05/17/2021 22:47	WG1672295
1,1,2,2-Tetrachloroethane	U		0.00105	0.00378	1	05/17/2021 22:47	WG1672295

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

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,1,2-Trichlorotrifluoroethane	U		0.00114	0.00378	1	05/17/2021 22:47	WG1672295
Tetrachloroethene	U		0.00136	0.00378	1	05/17/2021 22:47	WG1672295
Toluene	U		0.00197	0.00757	1	05/17/2021 22:47	WG1672295
1,2,3-Trichlorobenzene	U	C4 J4	0.0111	0.0189	1	05/17/2021 22:47	WG1672295
1,2,4-Trichlorobenzene	U	C3	0.00666	0.0189	1	05/17/2021 22:47	WG1672295
1,1,1-Trichloroethane	U		0.00140	0.00378	1	05/17/2021 22:47	WG1672295
1,1,2-Trichloroethane	U		0.000904	0.00378	1	05/17/2021 22:47	WG1672295
Trichloroethene	U		0.000884	0.00151	1	05/17/2021 22:47	WG1672295
Trichlorofluoromethane	U	C3	0.00125	0.00378	1	05/17/2021 22:47	WG1672295
1,2,3-Trichloropropane	U		0.00245	0.0189	1	05/17/2021 22:47	WG1672295
1,2,4-Trimethylbenzene	U		0.00239	0.00757	1	05/17/2021 22:47	WG1672295
1,2,3-Trimethylbenzene	U	C3 J4	0.00239	0.00757	1	05/17/2021 22:47	WG1672295
1,3,5-Trimethylbenzene	U		0.00303	0.00757	1	05/17/2021 22:47	WG1672295
Vinyl chloride	U		0.00176	0.00378	1	05/17/2021 22:47	WG1672295
Xylenes, Total	U		0.00133	0.00984	1	05/17/2021 22:47	WG1672295
(S) Toluene-d8	*108*			*75.0-131*		*05/17/2021 22:47*	WG1672295
(S) 4-Bromofluorobenzene	*89.0*			*67.0-138*		*05/17/2021 22:47*	WG1672295
(S) 1,2-Dichloroethane-d4	*82.0*			*70.0-130*		*05/17/2021 22:47*	WG1672295

Method Blank (MB)

(MB) R3655661-1 05/17/21 10:27

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000			

L1353592-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1353592-03 05/17/21 10:27 • (DUP) R3655661-3 05/17/21 10:27

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	84.3	84.4	1	0.0334		10

Laboratory Control Sample (LCS)

(LCS) R3655661-2 05/17/21 10:27

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) R3655669-3 05/17/21 19:50

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.0365	0.0500
Acrylonitrile	U		0.00361	0.0125
Benzene	U		0.000467	0.00100
Bromobenzene	U		0.000900	0.0125
Bromodichloromethane	U		0.000725	0.00250
Bromoform	U		0.00117	0.0250
Bromomethane	U		0.00197	0.0125
n-Butylbenzene	U		0.00525	0.0125
sec-Butylbenzene	U		0.00288	0.0125
tert-Butylbenzene	U		0.00195	0.00500
Carbon tetrachloride	U		0.000898	0.00500
Chlorobenzene	U		0.000210	0.00250
Chlorodibromomethane	U		0.000612	0.00250
Chloroethane	U		0.00170	0.00500
Chloroform	U		0.00103	0.00250
Chloromethane	U		0.00435	0.0125
2-Chlorotoluene	U		0.000865	0.00250
4-Chlorotoluene	U		0.000450	0.00500
1,2-Dibromo-3-Chloropropane	U		0.00390	0.0250
1,2-Dibromoethane	U		0.000648	0.00250
Dibromomethane	U		0.000750	0.00500
1,2-Dichlorobenzene	U		0.000425	0.00500
1,3-Dichlorobenzene	U		0.000600	0.00500
1,4-Dichlorobenzene	U		0.000700	0.00500
Dichlorodifluoromethane	U		0.00161	0.00250
1,1-Dichloroethane	U		0.000491	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
1,1-Dichloroethene	U		0.000606	0.00250
cis-1,2-Dichloroethene	U		0.000734	0.00250
trans-1,2-Dichloroethene	U		0.00104	0.00500
1,2-Dichloropropane	U		0.00142	0.00500
1,1-Dichloropropene	U		0.000809	0.00250
1,3-Dichloropropane	U		0.000501	0.00500
cis-1,3-Dichloropropene	U		0.000757	0.00250
trans-1,3-Dichloropropene	U		0.00114	0.00500
2,2-Dichloropropane	U		0.00138	0.00250
Di-isopropyl ether	U		0.000410	0.00100
Ethylbenzene	U		0.000737	0.00250
Hexachloro-1,3-butadiene	U		0.00600	0.0250
Isopropylbenzene	U		0.000425	0.00250

Method Blank (MB)

(MB) R3655669-3 05/17/21 19:50

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
p-Isopropyltoluene	U		0.00255	0.00500
2-Butanone (MEK)	U		0.0635	0.100
Methylene Chloride	U		0.00664	0.0250
4-Methyl-2-pentanone (MIBK)	U		0.00228	0.0250
Methyl tert-butyl ether	U		0.000350	0.00100
Naphthalene	U		0.00488	0.0125
n-Propylbenzene	U		0.000950	0.00500
Styrene	U		0.000229	0.0125
1,1,1,2-Tetrachloroethane	U		0.000948	0.00250
1,1,2,2-Tetrachloroethane	U		0.000695	0.00250
Tetrachloroethene	U		0.000896	0.00250
Toluene	U		0.00130	0.00500
1,1,2-Trichlorotrifluoroethane	U		0.000754	0.00250
1,2,3-Trichlorobenzene	U		0.00733	0.0125
1,2,4-Trichlorobenzene	U		0.00440	0.0125
1,1,1-Trichloroethane	U		0.000923	0.00250
1,1,2-Trichloroethane	U		0.000597	0.00250
Trichloroethene	U		0.000584	0.00100
Trichlorofluoromethane	U		0.000827	0.00250
1,2,3-Trichloropropane	U		0.00162	0.0125
1,2,3-Trimethylbenzene	U		0.00158	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Vinyl chloride	U		0.00116	0.00250
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*106*			*75.0-131*
(S) 4-Bromofluorobenzene	*89.1*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*74.6*			*70.0-130*

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

(LCS) R3655669-1 05/17/21 18:33 • (LCSD) R3655669-2 05/17/21 18:53

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 %
Acetone	0.625	0.489	0.718	78.2	115	10.0-160		J3	37.9	31
Acrylonitrile	0.625	0.752	0.539	120	86.2	45.0-153		J3	33.0	22
Benzene	0.125	0.117	0.110	93.6	88.0	70.0-123			6.17	20
Bromobenzene	0.125	0.116	0.118	92.8	94.4	73.0-121			1.71	20
Bromodichloromethane	0.125	0.111	0.111	88.8	88.8	73.0-121			0.000	20

QUALITY CONTROL SUMMARY

L1353606-01,02,03

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

(LCS) R3655669-1 05/17/21 18:33 • (LCSD) R3655669-2 05/17/21 18:53

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 %
Bromoform	0.125	0.112	0.104	89.6	83.2	64.0-132			7.41	20
Bromomethane	0.125	0.130	0.126	104	101	56.0-147			3.12	20
n-Butylbenzene	0.125	0.123	0.114	98.4	91.2	68.0-135			7.59	20
sec-Butylbenzene	0.125	0.118	0.118	94.4	94.4	74.0-130			0.000	20
tert-Butylbenzene	0.125	0.108	0.111	86.4	88.8	75.0-127			2.74	20
Carbon tetrachloride	0.125	0.101	0.100	80.8	80.0	66.0-128			0.995	20
Chlorobenzene	0.125	0.115	0.115	92.0	92.0	76.0-128			0.000	20
Chlorodibromomethane	0.125	0.115	0.115	92.0	92.0	74.0-127			0.000	20
Chloroethane	0.125	0.114	0.117	91.2	93.6	61.0-134			2.60	20
Chloroform	0.125	0.0997	0.0940	79.8	75.2	72.0-123			5.89	20
Chloromethane	0.125	0.123	0.119	98.4	95.2	51.0-138			3.31	20
2-Chlorotoluene	0.125	0.118	0.118	94.4	94.4	75.0-124			0.000	20
4-Chlorotoluene	0.125	0.119	0.123	95.2	98.4	75.0-124			3.31	20
1,2-Dibromo-3-Chloropropane	0.125	0.116	0.108	92.8	86.4	59.0-130			7.14	20
1,2-Dibromoethane	0.125	0.120	0.118	96.0	94.4	74.0-128			1.68	20
Dibromomethane	0.125	0.122	0.108	97.6	86.4	75.0-122			12.2	20
1,2-Dichlorobenzene	0.125	0.117	0.110	93.6	88.0	76.0-124			6.17	20
1,3-Dichlorobenzene	0.125	0.113	0.112	90.4	89.6	76.0-125			0.889	20
1,4-Dichlorobenzene	0.125	0.113	0.114	90.4	91.2	77.0-121			0.881	20
Dichlorodifluoromethane	0.125	0.137	0.136	110	109	43.0-156			0.733	20
1,1-Dichloroethane	0.125	0.117	0.110	93.6	88.0	70.0-127			6.17	20
1,2-Dichloroethane	0.125	0.108	0.0993	86.4	79.4	65.0-131			8.39	20
1,1-Dichloroethene	0.125	0.104	0.0994	83.2	79.5	65.0-131			4.52	20
cis-1,2-Dichloroethene	0.125	0.104	0.102	83.2	81.6	73.0-125			1.94	20
trans-1,2-Dichloroethene	0.125	0.101	0.0983	80.8	78.6	71.0-125			2.71	20
1,2-Dichloropropane	0.125	0.117	0.112	93.6	89.6	74.0-125			4.37	20
1,1-Dichloropropene	0.125	0.107	0.101	85.6	80.8	73.0-125			5.77	20
1,3-Dichloropropane	0.125	0.122	0.124	97.6	99.2	80.0-125			1.63	20
cis-1,3-Dichloropropene	0.125	0.111	0.108	88.8	86.4	76.0-127			2.74	20
trans-1,3-Dichloropropene	0.125	0.119	0.121	95.2	96.8	73.0-127			1.67	20
2,2-Dichloropropane	0.125	0.129	0.126	103	101	59.0-135			2.35	20
Di-isopropyl ether	0.125	0.120	0.114	96.0	91.2	60.0-136			5.13	20
Ethylbenzene	0.125	0.112	0.110	89.6	88.0	74.0-126			1.80	20
Hexachloro-1,3-butadiene	0.125	0.0891	0.0942	71.3	75.4	57.0-150			5.56	20
Isopropylbenzene	0.125	0.107	0.102	85.6	81.6	72.0-127			4.78	20
p-Isopropyltoluene	0.125	0.107	0.108	85.6	86.4	72.0-133			0.930	20
2-Butanone (MEK)	0.625	0.809	0.647	129	104	30.0-160			22.3	24
Methylene Chloride	0.125	0.108	0.103	86.4	82.4	68.0-123			4.74	20
4-Methyl-2-pentanone (MIBK)	0.625	0.698	0.667	112	107	56.0-143			4.54	20
Methyl tert-butyl ether	0.125	0.121	0.110	96.8	88.0	66.0-132			9.52	20

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

(LCS) R3655669-1 05/17/21 18:33 • (LCSD) R3655669-2 05/17/21 18:53

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 %
Naphthalene	0.125	0.0913	0.0842	73.0	67.4	59.0-130			8.09	20
n-Propylbenzene	0.125	0.126	0.128	101	102	74.0-126			1.57	20
Styrene	0.125	0.113	0.110	90.4	88.0	72.0-127			2.69	20
1,1,1,2-Tetrachloroethane	0.125	0.107	0.100	85.6	80.0	74.0-129			6.76	20
1,1,2,2-Tetrachloroethane	0.125	0.141	0.141	113	113	68.0-128			0.000	20
Tetrachloroethene	0.125	0.116	0.116	92.8	92.8	70.0-136			0.000	20
Toluene	0.125	0.118	0.114	94.4	91.2	75.0-121			3.45	20
1,1,2-Trichlorotrifluoroethane	0.125	0.110	0.110	88.0	88.0	61.0-139			0.000	20
1,2,3-Trichlorobenzene	0.125	0.0676	0.0691	54.1	55.3	59.0-139	J4	J4	2.19	20
1,2,4-Trichlorobenzene	0.125	0.0906	0.0811	72.5	64.9	62.0-137			11.1	20
1,1,1-Trichloroethane	0.125	0.104	0.0961	83.2	76.9	69.0-126			7.90	20
1,1,2-Trichloroethane	0.125	0.117	0.115	93.6	92.0	78.0-123			1.72	20
Trichloroethene	0.125	0.104	0.101	83.2	80.8	76.0-126			2.93	20
Trichlorofluoromethane	0.125	0.0787	0.0790	63.0	63.2	61.0-142			0.380	20
1,2,3-Trichloropropane	0.125	0.128	0.124	102	99.2	67.0-129			3.17	20
1,2,3-Trimethylbenzene	0.125	0.0876	0.0858	70.1	68.6	74.0-124	J4	J4	2.08	20
1,2,4-Trimethylbenzene	0.125	0.116	0.112	92.8	89.6	70.0-126			3.51	20
1,3,5-Trimethylbenzene	0.125	0.104	0.106	83.2	84.8	73.0-127			1.90	20
Vinyl chloride	0.125	0.119	0.116	95.2	92.8	63.0-134			2.55	20
Xylenes, Total	0.375	0.344	0.341	91.7	90.9	72.0-127			0.876	20
(S) Toluene-d8				*101*	*103*	*75.0-131*				
(S) 4-Bromofluorobenzene				*94.4*	*94.6*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*93.8*	*89.2*	*70.0-130*				

Method Blank (MB)

(MB) R3655902-2 05/18/21 11:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Naphthalene	U		0.00488	0.0125
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	*104*			*75.0-131*
(S) 4-Bromofluorobenzene	*108*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*98.4*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3655902-1 05/18/21 10:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Naphthalene	0.125	0.165	132	59.0-130	J4
1,2,4-Trimethylbenzene	0.125	0.142	114	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.134	107	73.0-127	
(S) Toluene-d8			*97.9*	*75.0-131*	
(S) 4-Bromofluorobenzene			*119*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*102*	*70.0-130*	

GLOSSARY OF TERMS

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.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

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.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
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
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
C4	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Data is likely to show a low bias concerning the result.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
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	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
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

* 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 Analytical.

Company Name/Address:	Billing Information:	Pres Chk
Apex Companies, LLC - Portland, OR 600 Stewart St. Ste 400 Seattle, WA 98101	Accounts Payable 3015 SW First Ave. Portland, OR 97201-4707	
Report to: Jie Xu	Email To: Jie.Xu@apexcos.com;kelsi.evans@apexcos.com;	
Project Description: Cascade	City/State Collected: Everett, WA	Please Circle: PT MT CT ET
Phone: 503-924-4704	Client Project # REGEN-250	Lab Project # ASHCREPOR-CASCADE
Collected by (print): H Hiscox	Site/Facility ID #	P.O. # REGEN-574
Collected by (signature): [signature] Immediately Packed on Ice N ___ Y X	Rush? (Lab MUST Be Notified) ___ Same Day ___ Five Day X Next Day ___ 5 Day (Rad Only) ___ Two Day ___ 10 Day (Rad Only) ___ Three Day	Quote # Date Results Needed

Analysis / Container / Preservative

Chain of Custody Page 1 of 2

Pace Analytical®

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Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1353600
D250
Table #
Acctnum: ASHCREPOR
Template: T186717
Prelogin: P844618
PM: 110 - Brian Ford
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOCs 8260D 2ozClr-NoPres	VOCs 8260D 40mlAmb/MeOH10ml/Syr	Remarks	Sample # (lab only)
* SB-1-2	G	SS	2	5/14/21	930	2	X	X	24 TAT (~~on Hold~~)	-01
* SB-1-5	G	SS	5		935	2	X	X	24 TAT (~~on Hold~~)	-02
* SB-1-8	G	SS	8		940	2	X	X	24 TAT (~~on Hold~~)	-03
SB-2-2	G	SS	2		900	2	X	X	on Hold	
SB-2-6	G	SS	6		908	2	X	X	on Hold	
SB-2-8	G	SS	8		915	2	X	X	on Hold	
SB-3-2	G	SS	2		950	2	X	X	on Hold	
SB-3-6	G	SS	6		1006	2	X	X	on Hold	
SB-3-9	G	SS	9		1005	2	X	X	On Hold	
SB-4-2	G	SS	2		1010	2	X	X	On Hold	

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

Remarks: Samples marked "on Hold" hold analysis until (SB-1-2, SB-1-5, SB-1-8) are complete.
*24HR TAT

pH ______ Temp ______
Flow ______ Other ______

Samples returned via: __ UPS _X_ FedEx __ Courier ______

Tracking # 9186 2508 1386

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
RAD Screen <0.5 mR/hr: _✓Y _N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / (No) HCL / MeoH TBR
[signature]	5/14/21	1300		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: A3H 2.4+0=2.6 °C Bottles Received: 36
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) K. Holan	Date: 5/14/21 Time: 9:30

If preservation required by Login: Date/Time

05-146

Condition: NCF / (OK)

Company Name/Address:
Apex Companies, LLC - Portland, OR

600 Stewart St.
Ste 400
Seattle. WA 98101

Billing Information:
Accounts Payable
3015 SW First Ave.
Portland, OR 97201-4707

Pres Chk

Report to: Jie Xu

Email To: Jie.Xu@apexcos.com;kelsi.evans@apexcos.com;

Project Description: Cascade

City/State Collected: Everett, WA

Please Circle: PT MT CT ET

Phone: 503-924-4704

Client Project # REGEN-250

Lab Project # ASHCREPOR-CASCADE

Collected by (print): H Hiscox

Site/Facility ID #

P.O. # REGEN-574

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Date Results Needed

Quote #

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOCs 8260D 2oz Clr-NoPres	VOCs 8260D 40mlAmb/MeOH10ml/Syr	Remarks	Sample # (lab only)
SB-4-6	G	SS	6	5/14/21	1070	2	X	X	on Hold	
SB-4-8	G	SS	8		1024	2	X	X	on Hold	
SB-5-2	G	SS	2		1032	2	X	X	on Hold	
SB-5-6	G	SS	6		1043	2	X	X	on Hold	
SB-5-8	G	SS	8		1048	2	X	X	on Hold	
SB-6-2	G	SS	2		1102	2	X	X	on Hold	
SB-6-6	G	SS	6		1112	2	X	X	on Hold	
SB-6-8	G	SS	8		1117	2	X	X	on Hold	
		SS								
		SS								

Analysis / Container / Preservative

Chain of Custody Page 2 of 2

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SDG # L1357686

Table #

Acctnum: ASHCREPOR

Template: T186717

Prelogin: P844618

PM: 110 - Brian Ford

PB:

Shipped Via:

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

Remarks:
Hold samples untill SB-1-# results
* 24 hr TAT

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

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
RAD Screen <0.5 mR/hr: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	5/14/21	1300		2
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
				2.6+0.2=2.8 3b
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:
			K. Holder	5/14/21 9:30

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK