GeoDesign Inc
An NV5 Company

ANNUAL REPORT – 2020

Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon
DEQ LUST File No. 04-18-0818
DEQ ECSI No. 6381

For
Oregon Department of Environmental Quality
March 22, 2021

Project: BigBeams-1-04-05

GeoDesign Inc
AN NV5 COMPANY

March 22, 2021

Oregon Department of Environmental Quality
700 NE Multnomah Street, Suite 600
Portland, OR 97232

Attention: Sarah Greenfield

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On behalf of Blue Jump Suit LLC and AHI Cannery LLC, GeoDesign, Inc., DBA NV5 is pleased to submit this annual report, as required by DEQ as part of the PPA Scope of Work, for the Former Astoria Warehousing site located at 70 West Marine Drive in Astoria, Oregon. This annual report summarizes groundwater, sub-slab vapor, and indoor air sampling conducted at the project site in 2020. This annual report also documents sealing portions of the concrete slab, monitoring well gauging and free product removal, riverbank observations, and the installation and startup of an SVE system at the project site.

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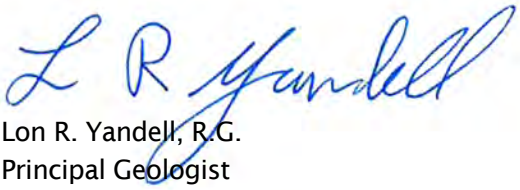
Please call if you have questions concerning this submittal.

Sincerely,

GeoDesign, Inc., DBA NV5

Erik A. Hedberg, P.E.
Associate Engineer



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ACRONYMS AND ABBREVIATIONS

BGS	below ground surface
BS	blank spike
BSD	blank spike duplicate
BTOC	below top of casing
cfm	cubic feet per minute
CMMP	Contaminated Media Management Plan
COC	chemical of concern or contaminant of concern
COPC	chemical of potential concern or contaminate of potential concern
DEQ	Oregon Department of Environmental Quality
ECSI	Environmental Cleanup Site Information
EPA	U.S. Environmental Protection Agency
HDPE	high density polyethylene
Hz	hertz
I.D.	identification
inHg	inches of mercury
iow	inches of water
IRM	Interim Remedial Measure
LUST	Leaking Underground Storage Tank
mg/L	milligrams per liter
MS	matrix spike
MSD	matrix spike duplicate
MSL	mean sea level
MTBE	methyl tertiary butyl ether
mV	millivolts
NA	not applicable
NOAA	National Oceanic and Atmospheric Administration
NAVD	North American Vertical Datum
NC	not calculated
ND	not detected
NE	not established
ng/sample	nanograms per sample
NM	not measured
not detected	compound not detected at a concentration equal to or greater than the laboratory method reporting limit or reporting detection limit
NTU	nephelometric turbidity unit
ORP	oxidation reduction potential
PCE	tetrachloroethene
PID	photoionization detector
PPA	Prospective Purchaser Agreement
ppm	parts per million
psi	pounds per square inch
PVC	polyvinyl chloride
QC	quality control
RBC	risk-based concentration

RBDM	*Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites*
RPD	relative percent difference
SVE	soil vapor extraction
TCE	trichloroethene
TMB	trimethylbenzene
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
µS/cm	microSiemens per centimeter
VFD	variable frequency drive
VOC	volatile organic compound

1.0 INTRODUCTION

This annual report summarizes groundwater, sub-slab vapor, and indoor air sampling conducted at the project site in 2020. The annual report also documents sealing portions of the concrete slab, monitoring well gauging and free product removal, riverbank observations, and the installation and startup of an SVE system at the project site. Groundwater, sub-slab vapor, and indoor air sampling and SVE installation were conducted in general accordance with the DEQ-approved IRM (GeoDesign, Inc., 2020b). The project site is shown relative to surrounding physical features on Figure 1. The layout of the project site is shown on Figures 2 and 3. Acronyms and abbreviations used herein are defined above, immediately following the Table of Contents.

2.0 BACKGROUND

Background information for the project site is described in the documents listed in the "References" section at the end of this report.

Blue Jump Suit LLC and AHI Cannery LLC, on behalf of Fort George Brewery, entered into a PPA with DEQ in October 2019. The Covid-19 pandemic and subsequent emergency declarations resulted in severe adverse impacts to personnel, project schedule, and budget for the project. As a result, the scope of work presented in the original PPA was amended by DEQ to allow greater flexibility in the work performed and timeframe for its completion. The PPA amendment was transacted on May 28, 2020 and included the following general elements:

- **Short-Term Measures**
  - Seal the concrete slab of the north and east portions of the former can manufacturing warehouse and the former shop building.
  - Quarterly gauging of monitoring wells and removal of free product (greater than 0.02 foot).
  - Annual indoor air sampling using a passive diffusion-type air sampler.
  - Semi-annual groundwater monitoring of the eight monitoring wells for one year following approval of the original scope of work (October 2019). Annual groundwater monitoring of the eight monitoring wells after the first year.
- **Long-Term Measures**
  - Implement an active remedy within five years of the PPA amendment. Continue operating system until performance metrics are achieved.
  - If necessary, prepare a Remedial Action Plan presenting a final design for the long-term active remediation technologies.
  - If necessary, enter into an Easement and Equitable Servitude.
  - Implement the DEQ-approved CMMP during earthwork conducted at the project site.

3.0 PROJECT SITE ACTIVITIES

Activities conducted at the project site in 2020 included sealing portions of the concrete floor slab, quarterly groundwater monitoring well gauging, quarterly removal of free product, quarterly riverbank inspections, indoor air sampling, sub-slab vapor sampling, groundwater sampling, and the installation and startup of an SVE system. These activities are discussed in the following sections.

3.1 CONCRETE SEALANT

The concrete floor of the east portion of the former can manufacturing warehouse and the former shop building was sealed with an epoxy coating (Permoacoat 3000lb) in July 2020 to assist in mitigating potential vapor intrusion from sub-slab vapors. The epoxy coating is rated as "suitable for constant immersion" in gasoline and benzene, indicating it will not deteriorate from exposure to vapors at the project site. DEQ approved the sealant and application area in an email dated April 30, 2020.

The epoxy coating was applied in accordance with the manufacturer's instructions and appeared to adequately seal joints, cracks, and floor penetrations. Application of the epoxy resulted in a finish coating thickness of at least ¼ inch and was cured for two days. Details showing the preparation of cracks and floor penetrations and a product cut sheet are presented in Appendix A. Discrepancies or unanticipated conditions were not encountered during application of the epoxy. A final inspection was conducted after the epoxy cured and new cracks, unsealed penetrations, or areas with inadequate sealing were not observed. The locations sealed by the epoxy are shown on Figure 4. Photographs of the installation of the epoxy coating are presented in Appendix B.

3.2 MONITORING WELL GAUGING AND FREE PRODUCT REMOVAL

GeoDesign gauged monitoring wells MW-1 through MW-8 and air sparging wells (PAS-1 and OAS-1 through OAS-4) in June 2019 (third quarter), December 2019 (fourth quarter), February 2020 (first quarter), April and June 2020 (second quarter), August 2020 (third quarter), and December 2020 (fourth quarter). Groundwater elevation measurements and free product measurements are presented in Table 1. The presence of free product appears intermittent in nature and of limited thickness, suggesting the volume of free product at the project site is limited.

Approximately 0.02 foot of free product was initially observed in monitoring well MW-8 on April 20, 2020. Free product was removed using a peristaltic pump and stored in 55-gallon drums on site. Free product was not observed in monitoring well MW-8 on April 28, 2020. Free product was observed again in monitoring well MW-8 on August 25, 2020 and was removed using a peristaltic pump. An absorbent sock was subsequently installed in monitoring well MW-8 to capture potential free product. The absorbent sock has been changed each quarter and has been observed to have a heavy petroleum-like odor and staining. Measurable free product has not been observed in monitoring well MW-8 in subsequent gauging events.

Approximately 0.21 foot of free product was observed in observation well OAS-2 on April 20, 2020. Free product was removed using a peristaltic pump and stored in 55-gallon drums on site. Free product has not been observed in observation well OAS-2 during subsequent gauging events.

Approximately 0.71 foot of free product was initially observed in observation well OAS-3 on April 20, 2020. Free product was removed from observation well OAS-3 using a peristaltic pump and stored in 55-gallon drums on site. Free product has been periodically observed in observation well OAS-3 ranging from 0.21 to 0.49 foot thick. An absorbent sock cannot be installed in observation well OAS-3 because it is a ¾-inch-thick well. Free product is removed from observation well OAS-3 using a peristaltic pump and stored in 55-gallon drums on site.

Based on these results, quarterly monitoring well gauging and free product removal will continue for another four quarters (through 2021).

3.3 RIVERBANK INSPECTIONS

GeoDesign inspected the riverbank adjacent to the project site during relatively low tides for evidence of groundwater seeps or petroleum-like sheens. Riverbank inspections were conducted from the top of the bank and were conducted on December 6, 2019 (fourth quarter), February 19, 2020 (first quarter), April 20, 2020 (second quarter), August 26, 2020 (third quarter), and December 18, 2020 (fourth quarter). Riverbank inspections were generally conducted within ±1 hour of low tide. The riverbank inspection conducted in December 2020 was conducted approximately 3.5 hours after low tide because low tides were before and after sunset, limiting the ability to visually observe the riverbank. Riverbank inspections were conducted by walking the top of the shoreline along the project site, which allowed for visual observations of the slope of the riverbank, which generally consists of riprap. The pier on the northwest portion of the project site has concrete walls along the bank of the river and the small bay located to the east has a sandy shoreline on the south end along West Marine Drive.

GeoDesign has not observed evidence of groundwater seeps or petroleum-like sheens during the quarterly riverbank inspections conducted at the project site. Photographs of the riverbank are presented in Appendix B. A summary of the riverbank inspections is presented in Table 2.

3.4 INDOOR AIR MONITORING

On November 18, 2020 GeoDesign deployed eight air samplers at the project site in general accordance with the DEQ-approved revised IRM (GeoDesign, Inc. 2020b). Each air sampler consisted of a Radiello 130 passive air sampler and was deployed for approximately 14 days. Each sample was collected at the approximate same location of the previous indoor air samples collected in 2019 for comparison purposes. Seven air samples were collected inside the project site structure and one background air sample was collected from the exterior of the project site. The sampling locations are shown on Figure 5.

Each sample was collected at approximate breathing level in areas of high occupancy and/or areas where previous vapor samples indicated elevated concentrations of COPCs. The background air sample was collected from the exterior of the project site at approximately

15 feet above the ground surface. The start and end times, initial and final barometric pressures, and initial and final ambient temperatures were measured at each sample location and are presented in the table below.

Summary of Indoor Air Sampling

Sample I.D.	Location Description	Date	Start/End Time	Initial/Final Barometric Pressure (inHg)	Initial/Final Ambient Temperature (degrees Fahrenheit)
Indoor-1	Office Area	11/18/20 through 12/02/20	1134/0957	29.62/30.12	~68
Indoor-2	Office Area		1136/1000		
Indoor-3	Warehouse		1138/1004		~50s
Indoor-4	Warehouse		1140/1006		
Indoor-5	Shop Area		1145/1013		
Indoor-6	Warehouse		1150/1011		
Indoor-7	Warehouse		1153/1008		
Background	Exterior		1155/1016		

3.4.1 Air Analytical Results

The eight air samples were submitted to Eurofins Air Toxics, LLC of Folsom, California, for analysis of VOCs by EPA Method TO-17. Analytical results were compared to the DEQ *Inhalation* RBCs for an occupational receptor. A comparison of the indoor air sample chemical analytical results to applicable regulatory criteria is discussed below and is shown in Table 3. Previous indoor air analytical results are also summarized in Table 3. The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Appendix C.

Up to 11 VOCs with DEQ-established screening levels were detected in the seven indoor air samples (Indoor-1 through Indoor-7). However, VOCs were not detected in the indoor air samples at concentrations greater than the DEQ *Inhalation* RBCs for an occupational receptor. Further, VOCs were detected at similar concentrations as the previous sampling event conducted in 2019. Previous and current detected concentrations of benzene and ethylbenzene are shown on Figure 5.

Benzene, carbon tetrachloride, ethylbenzene, toluene, and xylenes were also detected in the background sample (Background) collected from the exterior of the project site.

3.5 GROUNDWATER MONITORING

GeoDesign sampled monitoring wells MW-1 through MW-8 on June 25, 2020 in general accordance with the sampling methodology outlined in the revised IRM (GeoDesign, Inc. 2020b). Each well was purged in general accordance with the EPA-recommended low-flow purging and sampling procedure (EPA, 2017a).

All sampling equipment used in the collection of groundwater samples was decontaminated prior to use. Decontamination was performed on all re-usable sample processing equipment that came into contact with sampling media and the wells. Decontamination was performed prior to sampling each location using the following procedures:

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

Each monitoring well was accessed and depth to groundwater was measured using a decontaminated Solinst® interface meter once the groundwater level equilibrated. Each well was purged using a peristaltic pump connected to new, disposal HDPE and silicon tubing. Groundwater quality parameters were measured using a YSI 556 multiparameter system until the following groundwater parameters stabilized (three consecutive readings):

- pH: ±0.1 unit
- Conductivity: ±3 percent
- Temperature: ±3 percent
- Dissolved oxygen: ±10 percent (or three readings less than 0.5 mg/L)
- ORP: ±10 mV
- Turbidity: ±10 percent (or three readings less than 5 NTUs)

Once the field parameters stabilized, a groundwater sample was collected from each well into laboratory-prepared containers in order of volatility, with the containers for VOC analysis filled first.

A summary of field parameters is presented in Table 4. Groundwater samples were collected into laboratory-provided jars and placed immediately on ice. Standard chain-of-custody protocols were followed during transportation of samples to the laboratory.

3.5.1 Groundwater Measurements

GeoDesign collected depth to groundwater measurements from each well using an oil/water interface probe prior to sampling. The depth to groundwater measurements and groundwater elevations are summarized in Table 1. Free product was not observed in any of the wells during the June 2020 sampling event. The quarterly groundwater data indicates that shallow groundwater beneath the project site generally flows north, which is consistent with previous findings. However, groundwater appears to have northwestern and northeastern components toward the shoreline at times, which may be affected by tidal influences. A groundwater contour map using the elevation data collected on June 25, 2020 is shown on Figure 6.

3.5.2 Groundwater Analytical Results

The eight groundwater samples [MW-1(062520) through MW-8(062520)] were submitted to Pace Analytical of Mount Juliet, Tennessee, for analysis of gasoline-range hydrocarbons by Method NWTPH-Gx and RBDM VOCs by EPA Method 8260D. A comparison of the groundwater sample chemical analytical results to applicable regulatory criteria is discussed below and is shown in

Table 5. Previous groundwater analytical results are also summarized in Table 5. The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Appendix C.

Benzene was detected in the groundwater sample collected from monitoring well MW-8 at a concentration of 2,330 µg/L and naphthalene was detected in the groundwater sample collected from monitoring well MW-1 at a concentration of 546 µg/L. These detected concentrations are greater than the DEQ *Groundwater in Excavation* RBC for a construction/excavation worker receptor, but less than the DEQ *Volatilization to Outdoor Air* and *Vapor Intrusion into Buildings* RBCs for occupational receptors. Groundwater concentrations exceeding the DEQ *Groundwater in Excavation* RBCs are being addressed by implementing the DEQ-approved CMMP prepared for the project site.

COCs were otherwise either not detected or were detected at concentrations less than applicable DEQ RBCs.

3.6 SUB-SLAB VAPOR MONITORING

GeoDesign collected sub-slab vapor samples from the four previously installed Vapor Pins® (VP-1 through VP-4) on December 17, 2020, in general accordance with the DEQ-approved revised IRM (GeoDesign, Inc., 2020b) and DEQ's *Guidance for Assessing and Remediating Vapor Intrusion in Buildings,* dated March 25, 2010. The sub-slab vapor samples were collected prior to the SVE system start up (discussed in Section 3.7). The sub-slab sample locations are shown on Figure 2. The sample collection start and end times, initial and final summa canister vacuum pressures, barometric pressures, and ambient temperatures were measured at each sub-slab vapor sample location and are presented in the table below.

Summary of Sub-Slab Vapor Sampling

Sample I.D.	Date	Start/End Time	Initial/Final Vacuum (inHg)	Barometric Pressure (inHg)	Ambient Temperature (degrees Fahrenheit)
VP-1	12/17/20	817/822	29/8	30.15	~50s
VP-2		834/838	28/8		~60s
VP-3		902/906	27/8		~60s
VP-4		850/854	28/8		~60s

All sampling equipment used in the collection of sub-slab vapor samples was decontaminated prior to use. Decontamination was performed on all re-usable sample processing equipment that came into contact with sampling media, including fittings, valves, and tools. Decontamination was performed prior to sampling each location using the following procedures:

1. Washed with phosphate-free (Alconox™) detergent solution
2. Rinsed with tap water
3. Rinsed with distilled water
4. Dried with a heat gun

Rags saturated with 2-propanol were placed around the ground penetration and sampling train fittings as a leak check system. 2-propanol was detected at a maximum concentration of 56 µg/m^3 in sub-slab vapor sample VP-1. The detection limit for 2-propanol was elevated (6,400 µg/m^3) in sub-slab vapor sample VP-3 because of dilution of the sample. Based on the ambient temperature and barometric pressure at the time of sampling, and assuming 20 percent contribution of 2-propanol to the surrounding atmosphere, the maximum detection and the elevated detection limit represent less than 0.15 percent leakage contribution. The DEQ *Guidance for Assessing and Remediating Vapor Intrusion in Buildings,* dated March 25, 2010, states that less than a 5 percent contribution from ambient air indicates the sampling trains were sufficiently airtight.

3.6.1 Sub-Slab Vapor Analytical Results

The four sub-slab vapor samples (VP-1 through VP-4) were submitted to Eurofins Air Toxics, LLC of Folsom, California, for analysis for gasoline-range hydrocarbons and VOCs by EPA Method TO-15. A comparison of the sub-slab vapor sample chemical analytical results to applicable regulatory criteria is discussed below and is shown in Table 6. Previous sub-slab vapor analytical results are also summarized in Table 6. The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Appendix C.

Gasoline-range hydrocarbons, benzene, and ethylbenzene were detected in sub-slab vapor sample VP-3 during the December 2020 sampling event at concentrations of 57,000,000 µg/m^3, 470,000 µg/m^3, and 210,000 µg/m^3, respectively. These detected concentrations are greater than the DEQ *Vapor Intrusion into Buildings* RBCs for an occupational receptor.

Gasoline-range hydrocarbons were detected in sub-slab vapor sample VP-4 during the December 2020 sampling event at a concentration of 6,100,000 µg/m^3, which is greater than the DEQ *Vapor Intrusion into Buildings* RBCs for an occupational receptor. Otherwise, VOCs were not detected in sub-slab vapor sample VP-4 at concentrations greater than DEQ *Vapor Intrusion into Buildings* RBCs for an occupational receptor.

COCs were either not detected in sub-slab vapor samples VP-1 and VP-2 or were detected at concentrations less than applicable DEQ RBCs.

3.7 SVE SYSTEM INSTALLATION AND STARTUP

GeoDesign designed a SVE system based on a pilot study conducted at the project site in December 2019. The SVE system was designed to (1) remediate impacted vadose-zone soil identified beneath the former shop building, the east portion of the former can manufacturing warehouse, and the east parking lot, (2) remediate vapors identified beneath the east portion of the project site at concentrations greater than applicable DEQ RBCs, and (3) allow active and/or passive removal of accumulated sub-slab vapors in the future, if necessary. The SVE system presented in the revised IRM (GeoDesign, Inc. 2020b) was built by Mako Industries of Anaheim, California. The SVE system manual, including cut sheets, can be provided upon request. A summary of the SVE system components, installation, and startup is discussed in the following sections.

3.7.1 SVE Well Installation

One SVE well was installed in the former shop building on December 5, 2019 for a pilot test in accordance with the DEQ-approved work plan (GeoDesign, Inc., 2019a). This well was originally labeled PSVE-1 but is now referred to as SVE-1. Two additional SVE wells (SVE-2 and SVE-3) were installed in the eastern parking area of the project site on June 29, 2020 in accordance with the DEQ-approved revised IRM (GeoDesign, Inc. 2020b). Each SVE well was installed using an 8¼-inch-diameter, hollow-stem auger and consists of a 4-inch-diameter PVC pipe with a 5-foot, pre-packed, 0.020-inch slot screen set from 3 to 8 feet BGS. Filter pack material consisting of 10x20 silica sand was placed within the borehole annulus from approximately 1 foot above the top of the screen (2 feet BGS) to the total borehole depth. The wells were completed with a hydrated bentonite seal, water-tight locking plug, and flush-mount monument. The locations of the SVE wells are shown on Figures 2 and 3. Additional well construction information is presented on the well construction logs in Appendix D.

3.7.2 SVE Piping Installation

The SVE wells were connected to the system enclosure via trenches as shown on Figure 3. The piping connects to the wells using 90-degree pipe fittings that tie into the conveyance pipe just below the well monument. The below-ground SVE conveyance piping consists of 4-inch-diameter Schedule 40 PVC. The three SVE wells are manifolded together above ground immediately before the SVE system using 4-inch-diameter Schedule 80 PVC. Each SVE leg is equipped with shut-off valves, pressure/vacuum gauges, sampling ports, and ports to measure velocities using a probe-style anemometer. Trenching activities generated 16.77 tons of petroleum-impacted soil that were subsequently transported to the Hillsboro Landfill by Stratus Corporation for disposal. The disposal receipts are presented in Appendix E.

3.7.3 SVE System Components

The SVE system consists of a knockout pot, a vacuum pump and motor, an air dilution controller, an electrical control panel, and a burner/combustion chamber. A schematic of the SVE system is shown on Figure 7. Photographs of the SVE system are presented in Appendix B. The SVE system was constructed and installed in accordance with the DEQ-approved IRM.

The SVE system is powered by an Airtech 3BA regenerative blower that can produce vacuum levels from 1 to 318 iow and up to 500 cfm of airflow. The blower is powered by a 15-horsepower motor. The blower and motor are rated intrinsically safe and equipped with a variable frequency drive, interlocks, overload protection, thermal protection, and high-level knockout shut down switches.

Soil vapors are routed through an entrainment separator (knockout pot), which has a tangential inlet that cyclonically separates water from the vapor at +99 percent efficiency. The knockout pot has a demister element to remove incoming particulate and water droplets.

The SVE system is equipped with a dilution controller that regulates fresh air into the system based on the operating temperature.

Soil vapors are treated in the oxidizer chamber, which consists of a 3/16-inch carbon steel enclosure lined with a 5-inch ceramic fiber high temperature lining that provides a safe face

temperature. The oxidizer operates at a range of 1,450 to 1,650 degrees Fahrenheit with a destructive efficiency of 99 percent or above. The oxidizer is fueled by VOCs in the vapor extracted by the system and is supplemented by natural gas.

The SVE system is equipped with the following alarms:

- **High Water Alarm for Knockout Pot:** Water above the high level switch in the knockout pot causes the system to immediately shutoff.
- **Low Gas Pressure:** If gas pressure falls below 4 iow at the inlet to the fuel train, the system closes the process valve and shuts off the burner. The system will re-light if the conditions correct within 30 minutes.
- **High Gas Pressure:** If gas pressure is above 1 psi at the inlet to the fuel train, the system closes the process valve and shuts off the burner. The system will re-light if the conditions correct within 30 minutes.
- **Air Pressure:** If process vacuum is not enough, or the blower is off, the unit shuts down in five minutes. The unit immediately shuts down if there is mechanical failure from the motor, a broken belt, or loss of power.
- **Enclosure High Temperature:** If the system enclosure exceeds 90 degrees Fahrenheit, the unit shuts down.

3.7.4 SVE System Startup

Prior to startup, baseline vacuum levels were measured in each of the SVE observation wells (OSVE-1 through OSVE-4) and the sub-slab Vapor Pins® (VP-1 through VP-4). Baseline groundwater measurements were also collected from the on-site monitoring wells (MW-1 through MW-8) and observation wells (OAS-1 through OAS-4) prior to starting the SVE system. Baseline pressures are presented in Table 7 and baseline groundwater measurements are presented in Table 1.

The SVE system was initially started on December 18, 2020. During initial SVE system operation, field checks were and will continue to be conducted in general accordance with the following schedule:

- Daily for the first three days of operation
- Weekly for the first month of operation
- Quarterly thereafter for the first year
- Semi-annual beyond the first year (if needed)

System field checks include the following:

- Completed a visual inspection of the system and its components for damage and wear in accordance with equipment manufacturer's recommendations.
- Checked condensate levels in the moisture knockout vessel.
- Recorded operating pressures/vacuums, temperatures, and flow rates to evaluate if the system is operating within the design criteria.
- Performed necessary system adjustments.
- Collected field meter readings (PID, flow rate, vacuums, etc.).

- Recorded operational parameters for vapor effluent treatment equipment.
- Recorded vacuum response measurements from selected observation points.
- Recorded other pertinent information concerning the system operations and maintenance.

We collected system measurements, including flow rates and vacuums for the overall system and each SVE well, exhaust temperature, stack temperature, fresh air dilution, and pre-treatment PID readings. SVE system measurements are presented in Table 8. System conditions and notes regarding operation are presented in Table 8. Relatively stable conditions appear to have been achieved within approximately 24 hours of startup.

The system currently operates with an exhaust temperature of approximately 1,400 degrees Fahrenheit and a stack temperature of 1,650 degrees Fahrenheit. The overall system vacuum ranges from -2.5 to -6.5 inHg.

In-line pressure gauges were installed in each leg of the SVE system in the straight-run sections of pipe extending from the ground surface. Velocities are collected by inserting a probe-style anemometer into a sampling portion located in the straight run of piping. The average vacuum at each SVE well is approximately -60 iow since the system reached steady-state conditions. The measured flow rate is the greatest in SVE-1 (average of 278 cfm) and the lowest in SVE-3 (average of 114 cfm). To date, the average flow rate of the overall system since initial stabilization is 586 cfm. Vacuum and flow rate measurements for each of the SVE wells is presented in Table 8.

PID readings could not be collected from the SVE wells because the PID pump cannot overcome the applied vacuum.

Vacuum measurements were initially collected at each of the SVE observation points and Vapor Pins® VP-1 through VP-3. Based on initial measurements, vacuum measurements were subsequently also collected from SVE observation points OSVE-1 through OSVE-4 and Vapor Pins® VP-2 and VP-3. Since the system stabilized, the average vacuum measurements from the SVE observations points in the former shop building ranged from -7.48 to -13.13 iow. The average vacuum measurement collected from the sub-slab Vapor Pin® in the former shop area is -7.14 iow. An average negative pressure of -0.11 iow has been measured in sub-slab Vapor Pin® VP-2. Vacuum response data is presented in Table 7.

Based on EPA guidance, observable negative pressures of -0.1 iow or greater are considered to be actively remediating soil (EPA, 2017b). An average negative pressure of -0.11 iow has been measured beneath the concrete slab of the former can manufacturing warehouse in Vapor Pin® VP-2, which is located approximately 150 west of SVE-1 and approximately 160 feet northwest of SVE-2. Based on these observations, it appears that the radius of influence of the system is at least 150 feet. The estimated radius of influence is shown on Figure 2.

Visual inspections of the system and general comments on the system operation are summarized in Table 9.

3.7.5 Effluent Samples

Pre-treatment effluent samples [PRE(121820), PRE(122020), and PRE(122720)] were collected into 1-liter summa canisters on the first (December 18, 2020), third (December 20,2020), and ninth day (December 27, 2020) of SVE system operation to evaluate short-term concentration trends that are often highly variable during initial system operation. A pre-treatment sample was also collected on January 15, 2021 (approximately one month after startup). The pre-treatment samples were collected from a sampling port located between the knockout pot and the thermal oxidizer. The pre-treatment effluent samples were submitted to Pace Analytical of Mount Juliet, Tennessee, for analysis of gasoline-range hydrocarbons and VOCs by EPA Method TO-15. The effluent results are discussed below and are shown in Table 10. The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Appendix C.

Gasoline-range hydrocarbons were detected on the first day of operation at a concentration of 3,410,000 µg/m^3, on the third day at a concentration of 4,210,000 µg/m^3, and on the ninth day at a concentration of 1,650,000 µg/m^3. Gasoline-range hydrocarbons were detected in the effluent sample collected after approximately one month of operation at a concentration of 351,000 µg/m^3. Twenty VOCs were also detected in the pre-treatment effluent samples and, in general, appear to follow the same trend. Pre-treatment PID measurements were 560 ppm, 640 ppm, 458 ppm, and 200 ppm, on the 1st, 3rd, 9th, and 28th day of operation, respectively. The PID measurements collected during routine forthcoming monitoring activities will be used to develop a correlation with analytical results for future evaluations.

Estimated contaminant mass of gasoline and benzene removed by the SVE system during the first month of operation (28 days) was calculated using the (pre-treated) effluent analytical results and the average total flow rate calculated for the SVE system (586 cfm). Approximately 1,422 pounds of gasoline and approximately 12.4 pounds of benzene were removed within the first 28 days of operation. A summary of the calculation for contaminant mass removal is presented in Table 11.

Post-treatment effluent samples could not initially be collected from the exhaust stack due to the high temperature at the exhaust and lack of an adequate sampling protocol. A post-treatment effluent sample [POST(011521)] was collected from a sampling port at the top of the exhaust stack using a peristaltic pump and a 1-liter summa canister on January 15, 2021. The post-treatment sample was submitted to Pace Analytical of Mount Juliet, Tennessee, for analysis of gasoline-range hydrocarbons and VOCs by EPA Method TO-15. The post-treatment effluent results are shown in Table 10.

3.7.6 Groundwater Measurements

Solinst® Levelogger dataloggers (transducers) were installed in monitoring wells MW-1 through MW-5 and MW-7 to monitor groundwater levels at one-minute intervals once the SVE system was turned on. The transducer installed in MW-3 malfunctioned and the data is not available. Manual groundwater readings were collected multiple times during initial startup on December 18, 2020. A graph of water levels measured by the transducers is shown on Figure 8. Based on our review of the transducer data and manual groundwater readings collected during startup, it does not appear that the SVE system is causing significant groundwater mounding.

A significant storm event took place between January 11 and January 14, 2021, which caused the Columbia River and groundwater to rise significantly higher than seasonal averages. Approximately 180 gallons of water were removed from the SVE knockout pot on January 14 and January 15, 2021 and stored in 55-gallon drums on site. The 55-gallon drums of water from the knockout pot along with purge water from groundwater sampling will be sampled and disposed of off site. The drums will be disposed of as required based on the analytical results and volume of water generated at the project site.

Based on the effect of a recent high water storm event, GeoDesign proposes temporarily shutting down the SVE system during large storm events that may cause groundwater to rise significantly higher than seasonal averages and be drawn into the SVE system. There is currently insufficient data to determine the appropriate criteria for when the SVE system should be shut down due to large storm events. At this time we propose shutting down or reducing the vacuum on the wells if the Columba River is expected to reach an elevation of approximately 1 foot (NAVD88) for a duration of more than two days. GeoDesign will continue to monitor the conditions that cause excess water to accumulate in the knockout pot and will inform DEQ of our findings and recommend modifications to the SVE system operations as appropriate.

4.0 WORK PLAN DEVIATIONS

GeoDesign made the following deviations from the scopes of work presented in the DEQ-approved revised IRM (GeoDesign, Inc., 2020b):

- A pre-treatment effluent sample was collected on the ninth day of operation instead of the tenth. This deviation occurred as a result of staff availability. However, this should not affect the reliability of the sample results.
- Post-treatment effluent samples were intended to be collected concurrently with pre-treatment effluent samples. However, sampling was not initially possible due to the high temperature of the exhaust and the lack of a sampling protocol to deal with the high temperatures (i.e., sampling equipment and access to sampling port). PID measurements could also not be initially collected from the post-treatment effluent due to high temperatures. To address this issue a modified sample collection protocol has since been established, which includes drawing air from a sampling port located at the top of the stack using a peristaltic pump. An extra 3 to 5 feet of Teflon tubing is used between the sampling port and the peristaltic pump to allow the air to sufficiently cool down for sampling.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Activities conducted at the project site in 2020 and the first 15 days of 2021 are summarized as follows:

- The concrete slab on the east portion of the former can manufacturing warehouse and the former shop building was sealed with an epoxy coating. The epoxy coating was installed in accordance with the manufacturer's instructions to seal joints, cracks, and floor penetrations to further mitigate potential subsurface vapors from entering the structure.

- Indoor air, sub-slab vapor, and groundwater monitoring results collected in 2020 are consistent with previous findings. COCs were not detected in groundwater samples collected in 2020 at concentrations greater than the DEQ *Vapor Intrusion into Buildings* or *Volatilization to Outdoor Air* RBCs for an occupational receptor. COCs were detected in two sub-slab vapor samples (VP-3 and VP-4) collected on the east portion of the project site (prior to SVE system startup) at concentrations greater than the DEQ *Vapor Intrusion into Buildings* RBCs for an occupational receptor. However, COCs were not detected in indoor air samples at concentrations greater than the DEQ *Inhalation* RBCs for an occupational receptor. Based on the current and previous analytical results, it appears that indoor air conditions do not pose an unacceptable health risk to occupants. Operation of the SVE system is expected to drastically reduce soil and sub-slab vapor concentrations, which will be quantified and documented in future submittals. In addition, concentrations of contaminants in groundwater that exceed the DEQ *Groundwater in Excavation* RBCs are being addressed by implementing the DEQ-approved CMMP.
- Free product has been intermittently observed in monitoring/observation wells. Free product was removed from monitoring well MW-8 and observation wells OAS-2 and OAS-3. Free product was removed from OAS-2 using a peristaltic pump and has not been detected during subsequent gauging. Free product is sporadically detected in OAS-3 ranging from 0.21 to 0.71 foot thick. An absorbent sock was installed in monitoring well MW-8 but could not be installed in the observation wells because they are ¾-inch-thick wells. Free product is removed from observation wells using a peristaltic pump. The presence of free product appears intermittent in nature and of limited thickness, suggesting the volume of free product at the project site is limited and will likely decrease during operation of the SVE system. The January storm event did not appear to affect the presence of free product.
- Groundwater seeps or petroleum-like sheens were not observed during quarterly riverbank inspections conducted at the project site. This indicates free product is not entering the Columbia River from the project site.
- Three SVE wells were installed on the east portion of the project site beneath the former shop building and in the parking lot. The SVE system began operation on December 18, 2020. Vacuum response data collected from SVE observation wells and sub-slab Vapor Pins® indicates excellent vacuum influence propagated by the SVE system, and the radius of influence achieving at least -0.1 iow is estimated at 150 feet or greater.
- As of January 15, 2021, approximately 1,422 pounds of gasoline and 12.4 pounds of benzene have been removed by the SVE system. The revised IRM set a goal to remove approximately 50 percent of the estimated mass of gasoline and benzene in the vadose zone, which was calculated to be approximately 440 pounds of gasoline and 2.2 pounds of benzene. The calculated mass removal of the system to date is significantly greater than these design goals. It appears (1) the estimated mass of contaminants in the vadose zone was either underestimated, (2) the SVE system is also effectively stripping contaminants present on the water table, specifically free product previously measured beneath the former shop building, or (3) the SVE is creating a pressure/concentration gradient that is accelerating the volatilization of petroleum carbons from the free or dissolved phase to the vapor phase. This may account for the high mass removal volumes observed. Regardless, the SVE system appears to be operating as intended and is significantly more effective at

reducing contaminant mass at the project site than originally anticipated. GeoDesign recommends continued operation of the SVE system and sampling and observation activities in accordance with the revised IRM.

- Approximately 180 gallons of water accumulated in the SVE system knockout pot that was removed and stored in drums on the project site. This sudden accumulation of water appears to be the result of a large storm event between January 11 and January 14, 2021 that resulted in unusually high groundwater levels at the project site. The proximity of groundwater to the bottom of the SVE well screens resulted in increased water intake to the wells and eventually to the SVE system knockout pot. To avoid this condition in the future, GeoDesign proposes shutting down or reducing the vacuum on the wells if the Columbia River is expected to reach an elevation of approximately 1 foot (NAVD88) for a duration of more than two days. However, GeoDesign will continue to monitor the relationship between rain events, river levels, groundwater levels, and water intake to the system to evaluate more specifically what conditions cause excess water in the knockout pot. Based on our observations, GeoDesign will inform DEQ if the criteria for system shutdown are altered.

GeoDesign recommends continued quarterly monitoring well gauging and free product removal as necessary through 2021. Annual monitoring will be conducted in the third quarter of 2021, specifically August. This time has been selected because we anticipate relatively low precipitation, low barometric pressure, high outdoor air temperatures, and low tides, which should represent a "worst-case" scenario at the project site. DEQ approved this sampling schedule in an email dated November 25, 2020.

6.0 LIMITATIONS

This report has been prepared for Blue Jump Suit LLC and AHI Cannery LLC. This report is not intended for use by others except for regulatory authorities with jurisdiction over the project site, and the information contained herein is not applicable to other sites. Reliance by other parties must be approved by GeoDesign, Inc. in accordance with our standard contractual process for third-party reliance. Our interpretations of project site conditions are based on data from select air, groundwater, and sub-slab vapor samples collected from this limited area. The results of the analyses only indicate the presence or absence of those chemical constituents analyzed in those discrete sample locations at the time of the investigation. It is always possible that contamination could exist between the widely spaced exploration locations. Analytical data from the laboratory samples should only be considered as indicators of project site conditions and not a guarantee of the absence of subsurface impact in areas not sampled. The conclusions presented in this report are based on our observations made during field investigations and chemical analytical data. The findings of this assessment should be considered as a professional opinion based on our evaluation of select and limited data.

Our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

♦ ♦ ♦

We appreciate the opportunity to provide this annual report. Please call if you have questions or if we can provide additional information.

Sincerely,

GeoDesign, Inc., DBA NV5

Kyle Haggart, G.I.T.
Project Manager

Erik A. Hedberg, P.E.
Associate Engineer

Lon R. Yandell, R.G.
Principal Geologist

Expires 06/01/2021

REFERENCES

EPA, 2017a. *Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells*, revised September 19, 2017.

EPA, 2017b. *How to Evaluate Alternative Cleanup Technologies for Underground Storage Tank Sites, A Guide for Corrective Action Plan Reviewers*, Land and Emergency Management, EPA 510-B-17-003, dated October 2017.

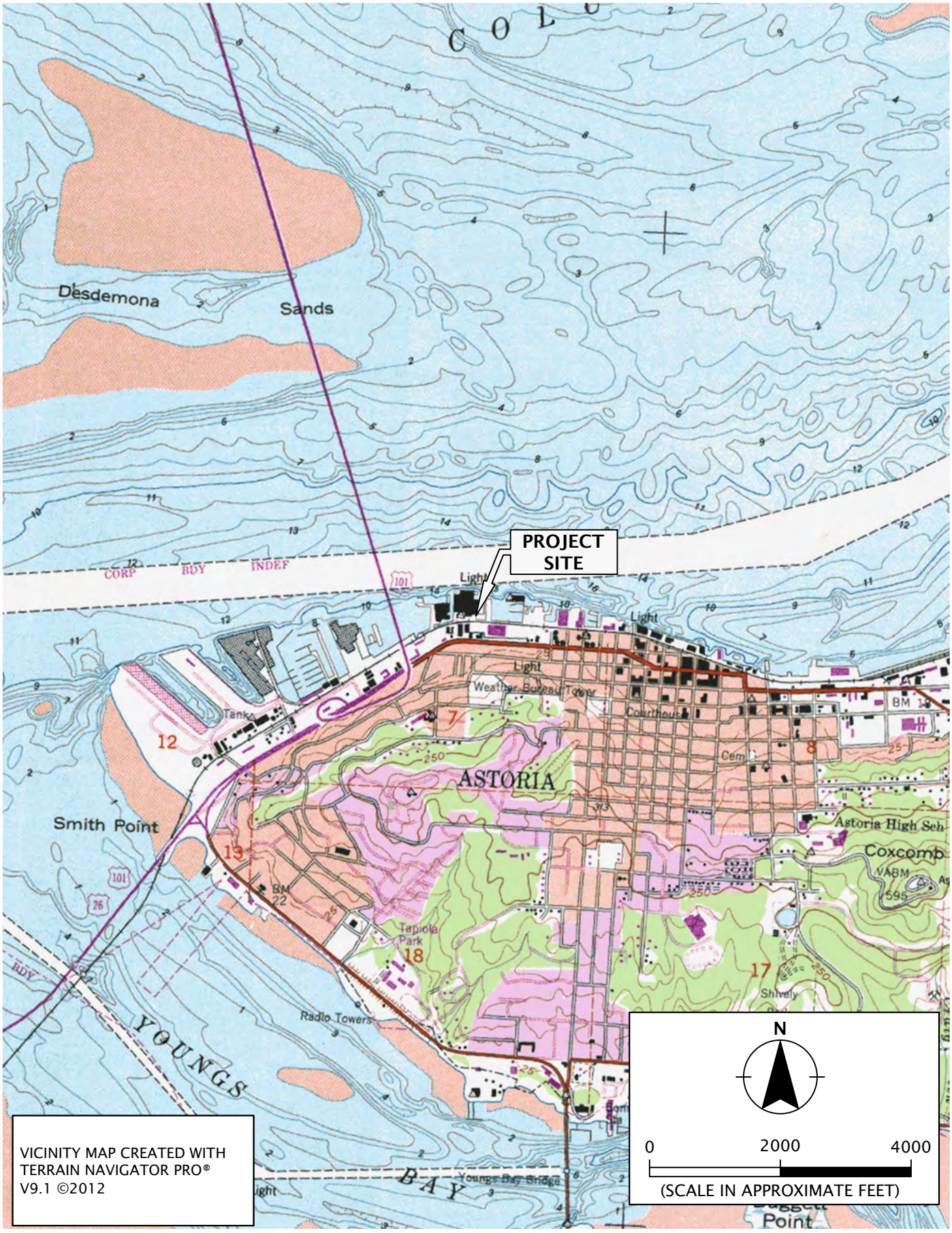
GeoDesign, Inc., 2019a. *Work Plan; Pre-Remedial Design Investigation; Former Astoria Warehousing; 70 West Marine Drive; Astoria, Oregon; DEQ LUST File No. 04-18-0818,* dated October 23, 2019.

GeoDesign, Inc., 2019b. *Pilot Testing Work Plan; Former Astoria Warehousing Site; 70 West Marine Drive; Astoria, Oregon; DEQ LUST File No. 04-18-0818,* dated December 9, 2019.

GeoDesign, Inc., 2020a. *Contaminated Media Management Plan; Former Astoria Warehousing Site; 70 West Marine Drive; Astoria, Oregon; DEQ LUST File No. 04-18-0818,* dated March 6, 2020.

GeoDesign, Inc, 2020b. *Revised Interim Remedial Measure Work Plan; Former Astoria Warehousing Site; 70 West Marine Drive; Astoria, Oregon; DEQ LUST File No. 04-18-0818; DEQ ECSI No. 6381*, dated October 29, 2020.

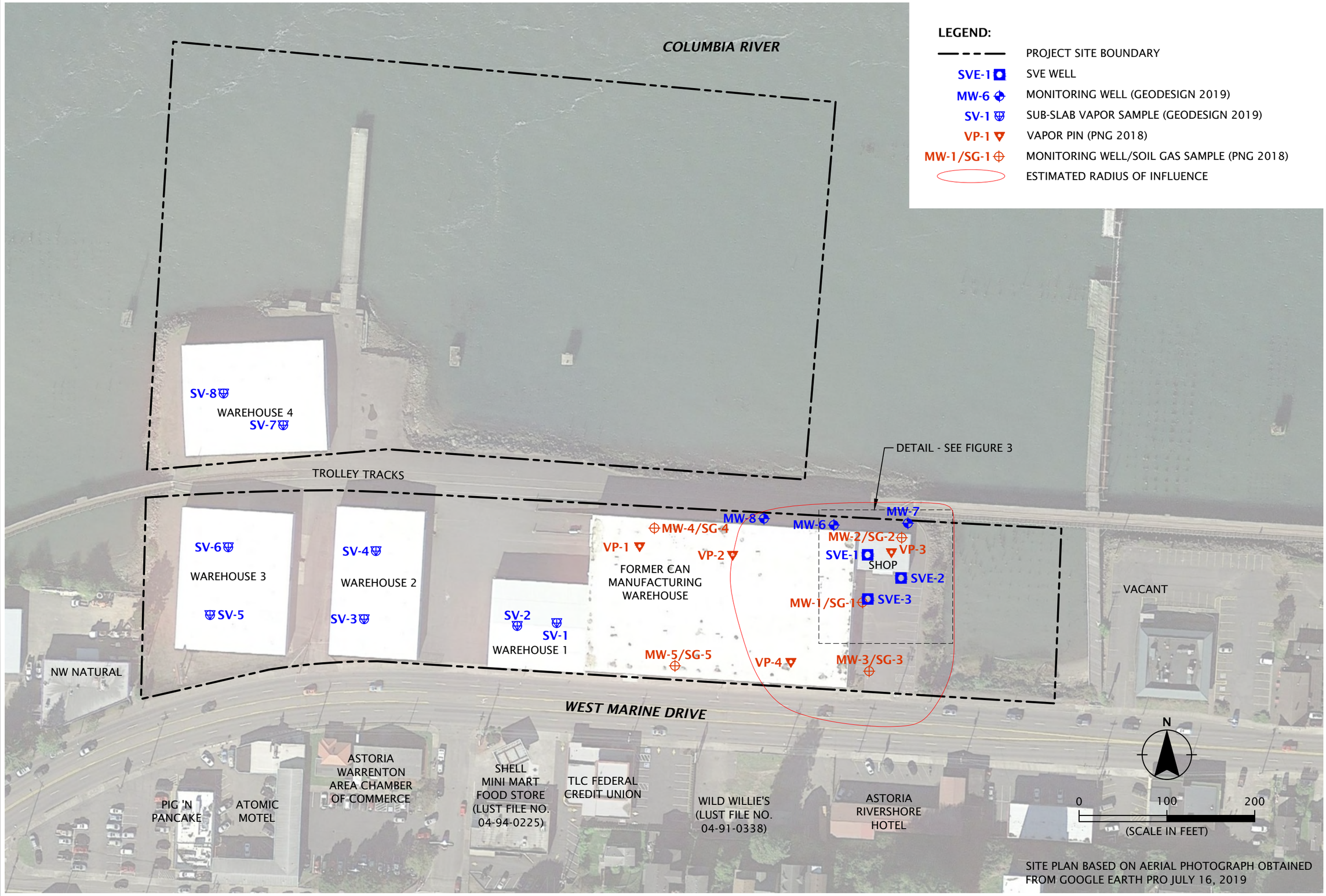
FIGURES



VICINITY MAP CREATED WITH TERRAIN NAVIGATOR PRO® V9.1 ©2012

GEODESIGN INC AN NV5 COMPANY	BIGBEAMS-1-04-05	**VICINITY MAP**	
	MARCH 2021	FORMER ASTORIA WAREHOUSING SITE ASTORIA, OR	**FIGURE 1**

Printed By: mmiller | Print Date: 3/2/2021 12:16:46 PM
File Name: J:\A-D\BigBeams\BigBeams-1\BigBeams-1-04\BigBeams-1-04-05- Monitoring\Figures\CAD\BigBeams-1-04-05-VM01.dwg | Layout: FIGURE 1



SITE PLAN

FIGURE 2

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

MARCH 2021

GeoDesign an NV5 company

Printed By: mmiller | Print Date: 3/2/2021 12:16:51 PM
File Name: J:\A-D\BigBeams\BigBeams-1\BigBeams-1-04\BigBeams-1-04-05- Monitoring\Figures\CAD\BigBeams-1-04-05-SP01.dwg | Layout: FIGURE 2

LEGEND:

- PROJECT SITE BOUNDARY
- PIPING TRENCH
- SYSTEM ENCLOSURE
- SVE-1 SOIL VAPOR EXTRACTION WELL
- MW-7 MONITORING WELL (GEODESIGN 2019)
- MW-1/SG-1 MONITORING WELL/SOIL GAS SAMPLE (PNG 2018)
- OAS-1 AIR SPARGING OBSERVATION WELL (GEODESIGN 2019)
- PAS-1 AIR SPARGING PILOT WELL (GEODESIGN 2019)
- OSVE-1 SOIL VAPOR EXTRACTION OBSERVATION WELL (GEODESIGN 2019)

NOTE:
1. SVE-1 WAS PREVIOUSLY LABELED PSVE-1.

N

0 15 30

(SCALE IN FEET)

SITE PLAN BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO JULY 16, 2019

SITE PLAN - DETAIL

FIGURE 3

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

MARCH 2021

GeoDesign an NV5 company

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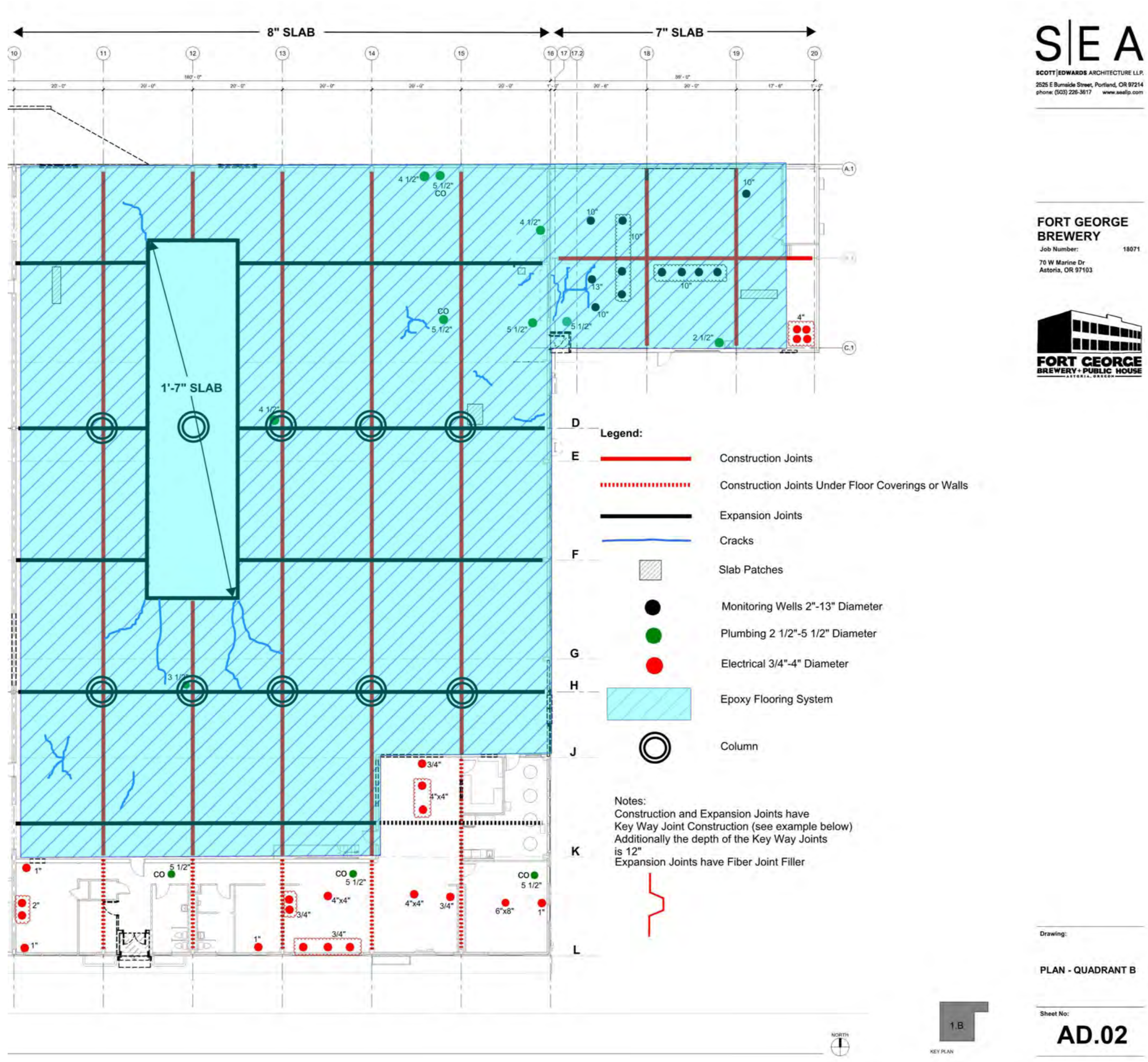

FIGURE 4

EXTENT OF EPOXY SEALANT

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

MARCH 2021

GEODESIGN INC
AN NV5 COMPANY

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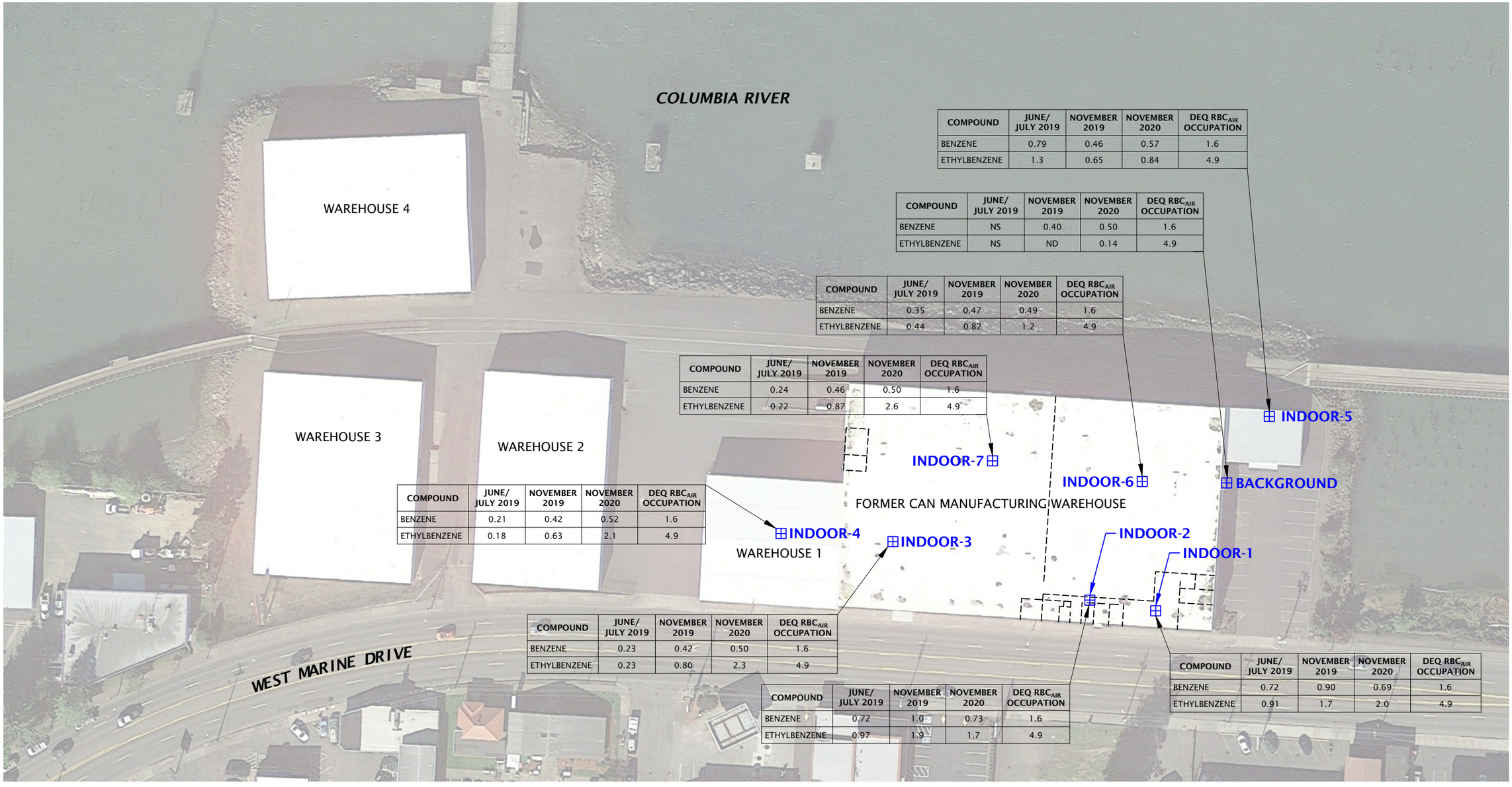

COMPOUND	JUNE/ JULY 2019	NOVEMBER 2019	NOVEMBER 2020	DEQ RBC_{AIR} OCCUPATION
BENZENE	0.79	0.46	0.57	1.6
ETHYLBENZENE	1.3	0.65	0.84	4.9

COMPOUND	JUNE/ JULY 2019	NOVEMBER 2019	NOVEMBER 2020	DEQ RBC_{AIR} OCCUPATION
BENZENE	NS	0.40	0.50	1.6
ETHYLBENZENE	NS	ND	0.14	4.9

COMPOUND	JUNE/ JULY 2019	NOVEMBER 2019	NOVEMBER 2020	DEQ RBC_{AIR} OCCUPATION
BENZENE	0.35	0.47	0.49	1.6
ETHYLBENZENE	0.44	0.82	1.2	4.9

COMPOUND	JUNE/ JULY 2019	NOVEMBER 2019	NOVEMBER 2020	DEQ RBC_{AIR} OCCUPATION
BENZENE	0.24	0.46	0.50	1.6
ETHYLBENZENE	0.22	0.87	2.6	4.9

COMPOUND	JUNE/ JULY 2019	NOVEMBER 2019	NOVEMBER 2020	DEQ RBC_{AIR} OCCUPATION
BENZENE	0.21	0.42	0.52	1.6
ETHYLBENZENE	0.18	0.63	2.1	4.9

COMPOUND	JUNE/ JULY 2019	NOVEMBER 2019	NOVEMBER 2020	DEQ RBC_{AIR} OCCUPATION
BENZENE	0.23	0.42	0.50	1.6
ETHYLBENZENE	0.23	0.80	2.3	4.9

COMPOUND	JUNE/ JULY 2019	NOVEMBER 2019	NOVEMBER 2020	DEQ RBC_{AIR} OCCUPATION
BENZENE	0.72	1.0	0.73	1.6
ETHYLBENZENE	0.97	1.9	1.7	4.9

COMPOUND	JUNE/ JULY 2019	NOVEMBER 2019	NOVEMBER 2020	DEQ RBC_{AIR} OCCUPATION
BENZENE	0.72	0.90	0.69	1.6
ETHYLBENZENE	0.91	1.7	2.0	4.9

LEGEND:

INDOOR-1 ⊞ RADIELLO SAMPLE

ND NOT DETECTED

NS NOT SAMPLED

NOTE:

VALUES REPORTED IN µg/m³

N

0 80 160

(SCALE IN FEET)

SITE PLAN BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO®, JUNE 18, 2019

AIR SAMPLE LOCATIONS

FIGURE 5

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

MARCH 2021

GEODESIGN AN NV5 COMPANY

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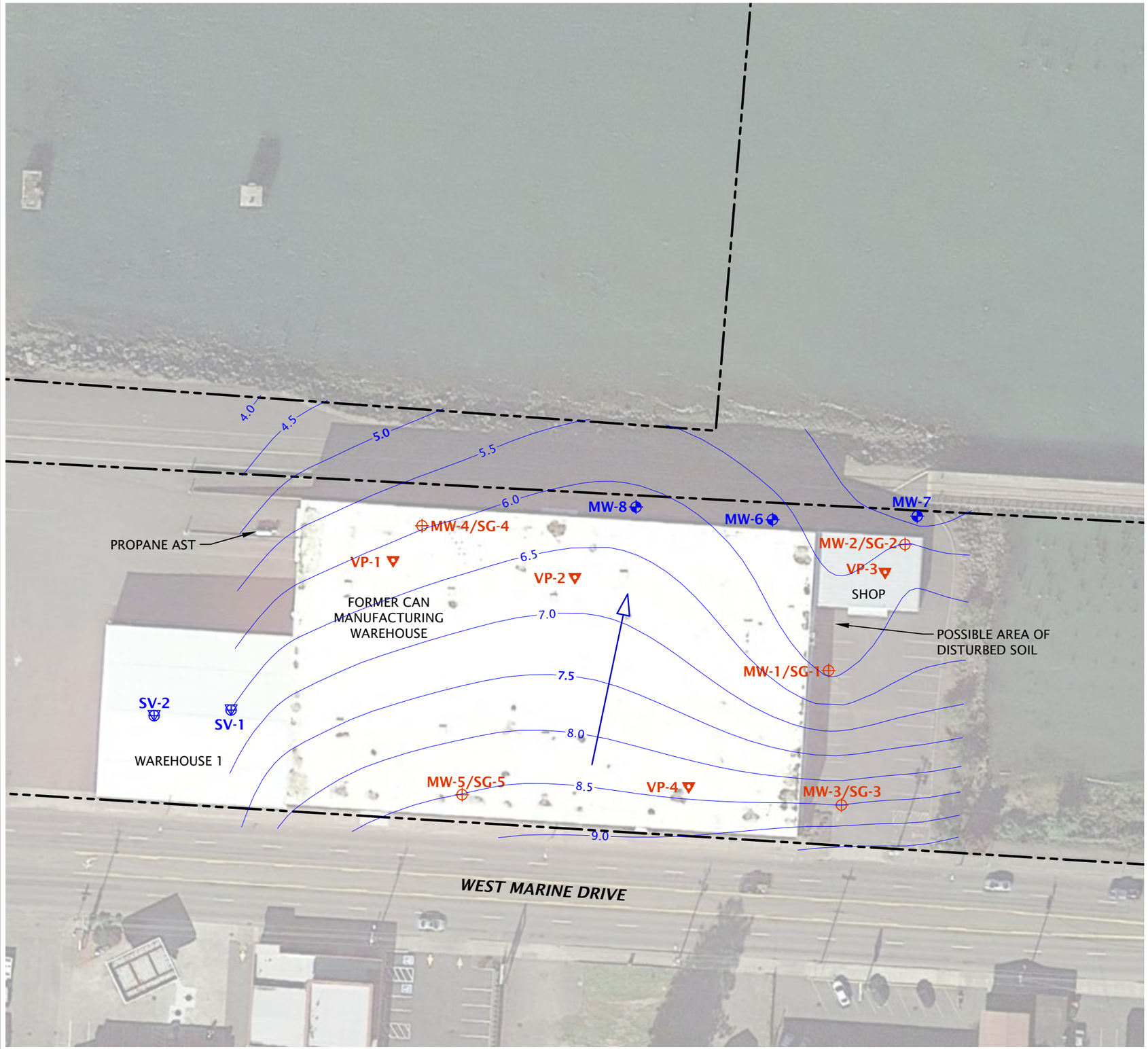
File Name: J:\A-D\BigBeams\BigBeams-1\BigBeams-1-04\BigBeams-1-04-05- Monitoring\Figures\CAD\BigBeams-1-04-05 AIR SAMPLE LOCS.dwg | Layout: FIGURE 5



LEGEND:

- PROJECT SITE BOUNDARY
- MW-6 — MONITORING WELL (GEODESIGN 2019)
- SV-1 — SUB-SLAB VAPOR SAMPLE (GEODESIGN 2019)
- VP-1 — VAPOR PIN (PNG 2018)
- MW-1/SG-1 — MONITORING WELL/SOIL GAS SAMPLE (PNG 2018)
- 2.0 — GROUNDWATER ELEVATION CONTOUR AS MEASURED ON JUNE 25, 2020 (0.5-FOOT CONTOUR INTERVAL) NAVD88 DATUM
- GROUNDWATER FLOW DIRECTION

N

0 60 120

(SCALE IN FEET)

SITE PLAN BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO JULY 16, 2019

GROUNDWATER CONTOUR MAP

FIGURE 6

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

MARCH 2021

GeoDesign an NV5 company

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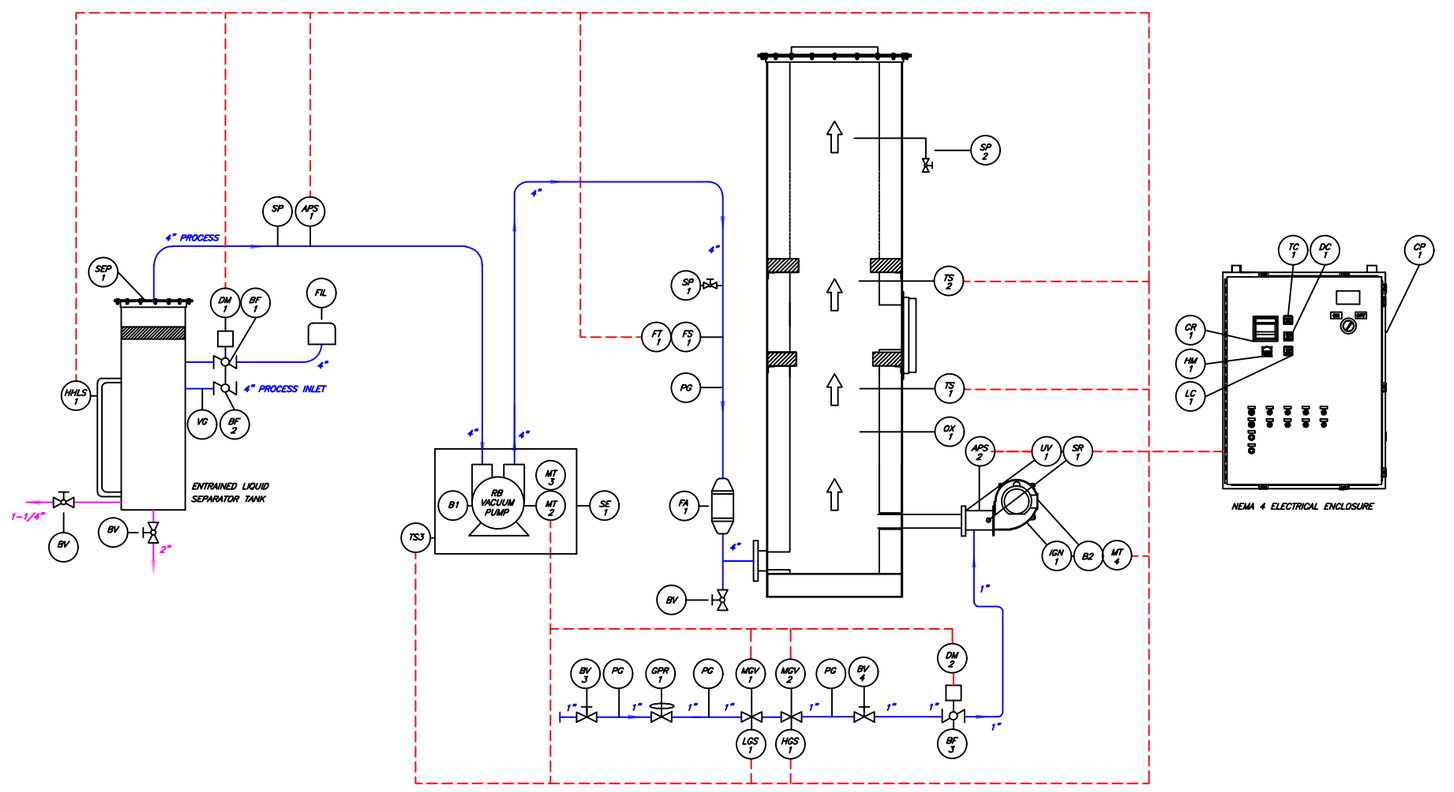
APS-1	AIR PRESSURE SWITCH - PROCESS
APS-2	AIR PRESSURE SWITCH - COMBUSTION
B-1	BLOWER
B-2	BURNER - COMBUSTION AIR
BF-1	BUTTERFLY VALVE - DILUTION
BF-2	BUTTERFLY VALVE - PROCESS
BF-3	BUTTERFLY VALVE - COMBUSTION AIR
BV-2	BALL VALVE - MANUAL DRAIN (1")
BV-3	BALL VALVE - MAIN GAS (1")
BV-4	BALL VALVE - MAIN GAS (1")
CP-1	CONTROL PANEL - NEMA 4
CR-1	CHART RECORDER - 3 CHANNEL
DC-1	DILUTION CONTROLLER
DM-1	DRIVE MOTOR - DILUTION/ISOLATION
DM-2	DRIVE MOTOR - COMBUSTION AIR
FA-1	FLAME ARRESTOR
FS-1	FLOW SENSOR - PITOT TUBE
FT-1	FLOW TRANSMITTER - DIFFERENTIAL
GPR-1	GAS PRESSURE REGULATOR
HGS-1	HIGH GAS PRESSURE SWITCH
HHLS-1	HIGH HIGH LIQUID LEVEL SWITCH
HM-1	HOUR METER
IGN-1	IGNITION TRANSFORMER
LC-1	LIMIT CONTROLLER - HIGH TEMPERATURE
LGS-1	LOW GAS PRESSURE SWITCH
MGV-1	MAIN GAS VALVE (1")
MGV-2	MAIN GAS VALVE (1")
MT-2	MOTOR - PROCESS BLOWER
MT-3	MOTOR - COOLING FAN
MT-4	MOTOR - COMBUSTION AIR BLOWER
OX-1	OXIDIZER - THERMAL CATALYTIC
PG	PRESSURE GAUGE
SEP-1	SEPARATOR - LIQUID
SE-1	SOUND ENCLOSURE - PROCESS BLOWER
SP-1	SAMPLE PORT
SR-1	SPARK ROD
TC-1	TEMPERATURE CONTROLLER
TS-1	TEMPERATURE SENSOR - CATALYST INLET
TS-2	TEMPERATURE SENSOR - CATALYST OUTLET
TS-3	TEMPERATURE SENSOR - ENCLOSURE
UV-1	UV SCANNER
VG	VACUUM GAUGE
FIL	INLET DILUTION FILTER



MAKO INDUSTRIES

500CFM TCAT OXIDIZER W/ REGEN BLOWER

PROCESS INSTRUMENTATION DRAWING

DATE: 10/23/20 | FILE: MIM625-500CFM TCAT-PID

MIM625

SVE SCHEMATIC

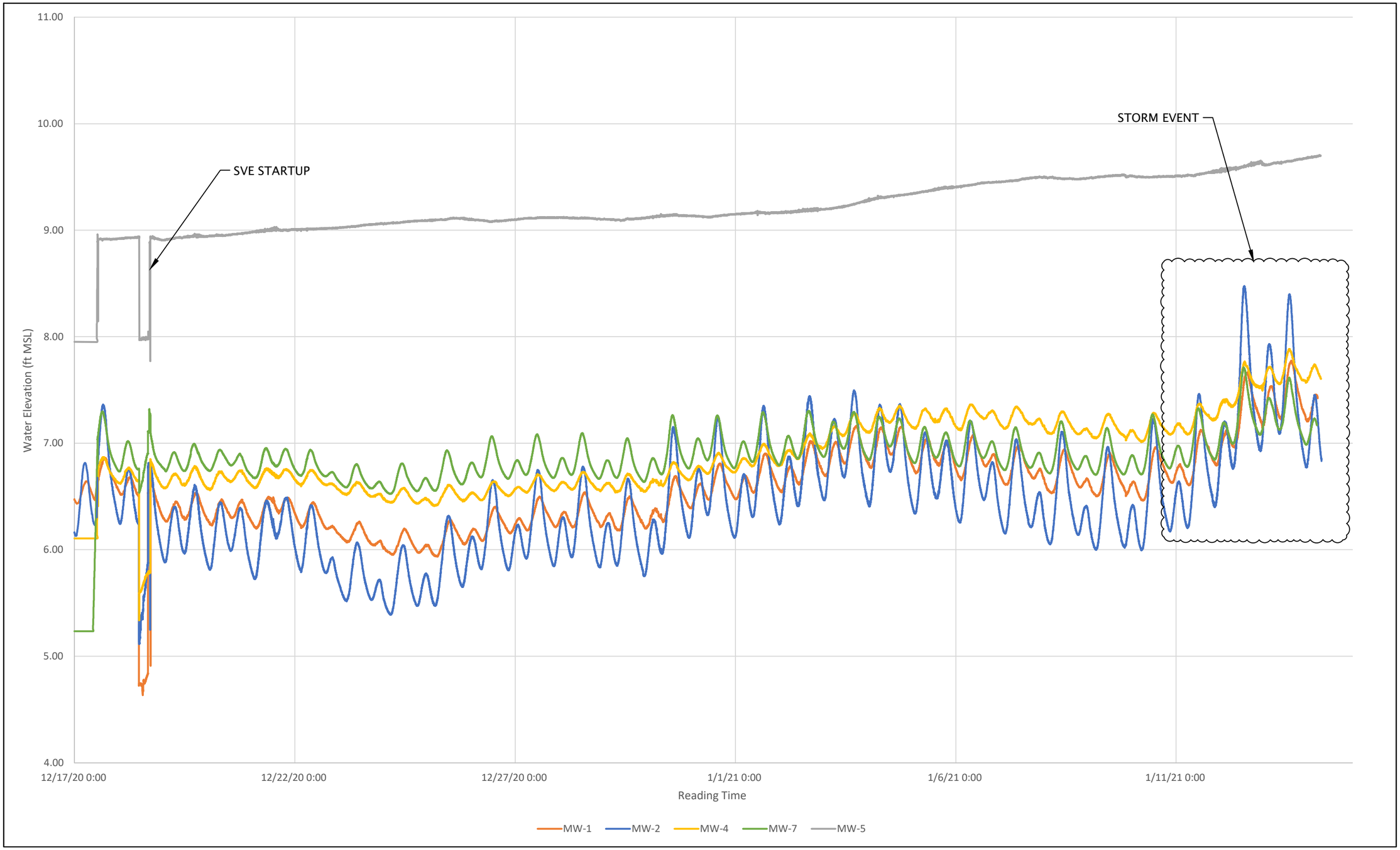
FIGURE 7

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

MARCH 2021

GEODESIGN INC
AN NIVIS COMPANY



WATER LEVELS - DECEMBER 17, 2020 THROUGH JANUARY 15, 2021

FIGURE 8

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

MARCH 2021

GEODESIGN AN NV5 COMPANY

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TABLES

TABLE 1
Summary of Groundwater Elevation Data
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
MW-1	16.45	-0.35	19.2	4 -19	10/03/18	10.91	5.54	NM
					06/28/19	11.31	5.14	NM
					11/15/19	10.83	5.62	No
					12/07/19	10.84	5.61	NM
					12/16/19	10.34	6.11	No
					02/19/20	10.20	6.25	No
					04/20/20	11.04	5.41	No
					04/28/20	10.44	6.01	No
					06/10/20	10.29	6.16	No
					06/25/20	10.50	5.95	No
					08/25/20	10.81	5.64	No
					08/26/20	10.94	5.51	No
					12/17/20	9.94	6.51	No
					12/18/20	10.00	6.45	No
					01/15/21	8.94	7.51	No
MW-2	17.78	-0.55	19.0	4 -19	10/03/18	12.38	5.40	NM
					06/28/19	13.01	4.77	NM
					11/15/19	12.25	5.53	No
					12/07/19	12.41	5.37	NM
					12/16/19	12.12	5.66	No
					02/19/20	12.07	5.71	No
					04/20/20	12.82	4.96	No
					04/28/20	12.40	5.38	No
					06/10/20	12.15	5.63	No
					06/25/20	12.11	5.67	No
					08/25/20	12.60	5.18	No
					08/26/20	12.54	5.24	No
					12/17/20	11.21	6.57	No
					12/18/20	11.78	6.00	No
					01/15/21	10.70	7.08	No

TABLE 1
Summary of Groundwater Elevation Data
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
MW-3	16.70	-0.33	18.6	4 -19	10/03/18	8.79	7.91	NM
					06/28/19	8.67	8.03	NM
					11/15/19	8.21	8.49	No
					12/07/19	8.22	8.48	NM
					12/16/19	7.87	8.83	No
					02/19/20	7.56	9.14	No
					04/20/20	8.10	8.60	No
					04/28/20	8.14	8.56	No
					06/10/20	8.18	8.52	No
					06/25/20	8.20	8.50	No
					08/25/20	8.76	7.94	No
					08/26/20	8.78	7.92	No
					12/17/20	7.61	9.09	No
					12/18/20	7.62	9.08	No
					01/15/21	7.21	9.49	No
MW-4	17.70	-0.35	18.8	4 -19	10/03/18	12.08	5.62	NM
					06/28/19	12.32	5.38	NM
					11/15/19	11.84	5.86	No
					12/07/19	11.90	5.80	NM
					12/16/19	11.53	6.17	No
					02/19/20	11.00	6.70	No
					04/20/20	11.93	5.77	No
					04/28/20	11.81	5.89	No
					06/10/20	11.44	6.26	No
					06/25/20	11.70	6.00	No
					08/25/20	11.95	5.75	No
					08/26/20	12.00	5.70	No
					12/17/20	11.11	6.59	No
					12/18/20	12.17	5.53	No
					01/15/21	10.09	7.61	No

TABLE 1
Summary of Groundwater Elevation Data
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
MW-5	17.97	-0.35	19.2	4 -19	10/03/18	10.24	7.73	NM
					06/28/19	9.79	8.18	NM
					11/15/19	9.54	8.43	No
					12/07/19	9.05	8.92	NM
					12/16/19	9.40	8.57	No
					02/19/20	8.50	9.47	No
					04/20/20	9.24	8.73	No
					04/28/20	9.31	8.66	No
					06/10/20	Inaccessible		NA
					06/25/20	9.46	8.51	No
					08/25/20	10.10	7.87	No
					08/26/20	10.00	7.97	No
					12/17/20	9.10	8.87	No
					12/18/20	9.08	8.89	No
					01/15/21	8.26	9.71	No
MW-6	17.14	-0.25	25.5	5-25	12/07/19	11.49	5.65	NM
					12/16/19	11.11	6.03	No
					02/19/20	11.00	6.14	No
					04/20/20	11.90	5.24	No
					04/28/20	11.60	5.54	No
					06/10/20	11.09	6.05	No
					06/25/20	11.50	5.64	No
					08/25/20	12.70	4.44	No
					08/26/20	11.70	5.44	No
					12/17/20	10.58	6.56	No
					12/18/20	10.73	6.41	No
					01/15/21	9.64	7.50	No

TABLE 1
Summary of Groundwater Elevation Data
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
MW-7	16.41	-0.25	25.3	5-25	12/07/19	10.20	6.21	NM
					12/16/19	10.99	5.42	No
					02/19/20	10.62	5.79	No
					02/19/20	10.60	5.81	No
					04/20/20	11.49	4.92	No
					04/28/20	11.58	4.83	No
					06/10/20	11.07	5.34	No
					06/25/20	11.59	4.82	No
					08/25/20	12.59	3.82	No
					08/26/20	11.20	5.21	No
					12/17/20	10.35	6.06	No
					12/18/20	10.61	5.80	No
					01/15/21	8.90	7.51	No
MW-8	16.62	-0.31	25.3	5-25	12/07/19	10.99	5.63	NM
					12/16/19	10.51	6.11	No
					02/19/20	10.25	6.37	No
					02/01/20	10.20	6.42	No
					04/20/20	11.19	5.43	No
					04/28/20	*10.96*	5.66	**0.02**
					06/10/20	10.40	6.22	No
					06/25/20	10.45	6.17	No
					08/25/20	*11.30*	5.32	**0.20**
					08/26/20	11.15	5.47	No
					12/17/20	10.25	6.37	No
					12/18/20	10.14	6.48	No
					01/15/21	8.94	7.68	No

TABLE 1
Summary of Groundwater Elevation Data
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
PAS-2	NM	NM	18.0	16-17	04/20/20	12.66	NM	No
					04/28/20	12.33		No
					06/10/20	12.33		No
					06/29/20	12.51		No
					08/25/20	12.33		No
					08/26/20	12.51		No
					12/17/20	11.29		No
					12/18/20	11.50		No
					01/15/21	10.89		No
OAS-1	NM	NM	19.3	10-20	12/11/19	12.35	NM	No
					04/20/20	12.68		No
					04/28/20	12.40		No
					06/10/20	11.95		No
					06/29/20	12.57		No
					08/25/20	15.50		No
					08/26/20	12.57		No
					12/17/20	11.23		No
					12/18/20	11.71		No
					01/15/21	10.91		No
OAS-2	NM	NM	19.6	10-20	12/11/19	12.31	NM	No
					04/20/20	*12.66*		**0.21**
					04/28/20	12.35		No
					06/10/20	11.94		No
					06/29/20	12.51		No
					08/25/20	12.62		No
					08/26/20	12.18		No
					12/17/20	11.14		No
					12/18/20	11.68		No
					01/15/21	10.89		No

TABLE 1
Summary of Groundwater Elevation Data
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Monitoring Well I.D.	Top of Casing Elevation (feet MSL)	Stickup (feet)	Well Depth (feet BGS)	Screened Interval (feet BGS)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (feet MSL)	Free Product (thickness in feet)
OAS-3	NM	NM	19.4	10-20	12/11/19	12.50	NM	No
					04/20/20	*12.66*		**0.71**
					04/28/20	*12.59*		**0.49**
					06/10/20	12.24		No
					06/29/20	*12.71*		**0.21**
					08/25/20	12.62		No
					08/26/20	12.78		No
					12/17/20	*11.52*		**0.25**
					12/18/20	11.90		No
					01/15/21	10.96		No
OAS-4	NM	NM	19.6	10-20	12/11/19	12.53	NM	No
					04/20/20	12.80		No
					04/28/20	12.60		No
					06/10/20	12.03		No
					06/29/20	12.70		No
					08/25/20	12.68		No
					08/26/20	12.18		No
					12/17/20	11.28		No
					12/18/20	11.95		No
					01/15/21	11.00		No

Notes:

Italics indicate groundwater elevations corrected for the presence of free product. A specific gravel of 0.729 was assumed for free product. Corrected depth to groundwater = DTW - (thickness of free product * 0.729).

Vertical datum is NAVD88.

NM: not measured/monitored during this event

TABLE 2
Summary of Riverbank Observations
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Date	Time (24 Hour)	Columbia River Water Level During Inspection*	Time from Low Tide (in hours)	Weather	Groundwater Seeps Observed?	Petroleum-Like Sheen Observed?
12/06/19	11:00	2.43	+1	Sunny	No	No
02/19/20	12:20	2.95	+0.5	Sunny	No	No
04/20/20	13:30	0.64	0	Sunny	No	No
08/26/20	10:00	0.59	+0.75	Sunny	No	No
12/18/20	9:30	3.95	+3.5	Rainy	No	No

Notes:
1. Water levels obtained from NOAA observatoin station 9439040 in Astoria, Oregon, using NAVD88 Datum.

TABLE 3
Summary of Air Sample Chemical Analytical Results
VOCs
Former Astoria Warehousing Site
Astoria, Oregon

Sample I.D.	Sample Exposure Dates	VOCs[1] EPA Method TO-17 (µg/m³)																
		Benzene	Bromomethane	Carbon Tetrachloride	Chloroform	1,4-Dichlorobenzene	1,2-Dichloroethane	Ethylbenzene	Freon 113	Methylene Chloride (Dichloromethane)	Styrene	PCE	Toluene	TCE	1,2,4-TMB	1,3,5-TMB	m,p-xylene	o-xylene
Indoor-1	6/29/19 to 7/13/19	**0.72**	**0.36***	ND	ND	**0.069**	ND	**0.91**	**0.3***	**4.8***	**0.69**	**0.073**	**0.63**	0.046 U	**1.5**	**0.38***	**2.8**	**0.67**
	11/6/19 to 11/15/19	**0.90**	--	**0.23**	**0.19**	0.15 U	0.10 U	**1.7**	--	--	0.13 U	0.13 U	**2.5**	0.11 U	--	--	**5.7**	**1.6**
	11/18/20 to 12/02/20	**0.69**	--	**0.47**	**0.28**	0.10 U	**0.082**	**2.0**	--	--	**0.17**	0.087 U	**26**	0.074 U	--	--	**8.1**	**2.5**
Indoor-2	6/29/19 to 7/13/19	**0.72**	ND	ND	ND	ND	ND	**0.97**	ND	ND	**0.65**	**0.074**	**0.61**	0.046 U	**1.1**	ND	**2.4**	**0.64**
	11/6/19 to 11/15/19	**1.0**	--	**0.24**	**0.24**	0.15 U	0.10 U	**1.9**	--	--	0.13 U	0.13 U	**2.7**	0.11 U	--	--	**6.2**	**1.7**
	11/18/20 to 12/02/20	**0.73**	--	**0.51**	**0.27**	0.10 U	**0.082**	**1.7**	--	--	**0.15**	0.087 U	**24**	0.074 U	--	--	**6.8**	**2.1**
Indoor-3	6/29/19 to 7/13/19	**0.23**	ND	**0.4***	ND	ND	ND	**0.23**	ND	ND	**0.17**	**0.063**	**1.2**	0.046 U	**0.58**	ND	**1.5**	**0.35**
	11/6/19 to 11/15/19	**0.42**	--	**0.24**	0.10 U	0.15 U	0.10 U	**0.80**	--	--	0.13 U	0.13 U	**1.3**	0.11 U	--	--	**2.8**	**0.84**
	11/18/20 to 12/02/20	**0.50**	--	**0.24**	0.071 U	0.10 U	0.069 U	**2.3**	--	--	0.087 U	**0.092**	**56**	**0.096**	--	--	**8.8**	**2.6**
Indoor-4	6/29/19 to 7/13/19	**0.21**	ND	**0.49***	ND	ND	ND	**0.18**	ND	ND	**0.14**	**0.054**	**1.1**	0.046 U	**0.45**	ND	**1.3**	**0.28**
	11/6/19 to 11/15/19	**0.42**	--	**0.25**	0.10 U	0.15 U	0.10 U	**0.63**	--	--	0.13 U	0.13 U	**1.2**	0.11 U	--	--	**2.2**	**0.67**
	11/18/20 to 12/02/20	**0.52**	--	**0.26**	0.071 U	0.10 U	0.069 U	**2.1**	--	--	0.087 U	**0.091**	**67**	**0.11**	--	--	**7.6**	**2.3**
Indoor-5	6/29/19 to 7/13/19	**0.79**	ND	**0.43***	ND	ND	ND	**1.3**	**0.29***	ND	**0.23**	**0.098**	**2.5**	0.046 U	**1.4**	ND	**3.8**	**1.8**
	11/6/19 to 11/15/19	**0.46**	--	**0.20**	0.10 U	0.15 U	0.10 U	**0.65**	--	--	0.13 U	0.13 U	**1.4**	0.11 U	--	--	**2.3**	**0.69**
	11/18/20 to 12/02/20	**0.57**	--	**0.27**	0.071 U	0.10 U	0.069 U	**0.84**	--	--	0.087 U	0.090 U	**26**	0.077 U	--	--	**3.1**	**0.94**
Indoor-6	6/29/19 to 7/13/19	**0.35**	ND	**0.38***	ND	ND	ND	**0.44**	ND	ND	**0.23**	**0.11**	**1.6**	0.046 U	**1.1**	ND	**2.2**	**0.69**
	11/6/19 to 11/15/19	**0.47**	--	**0.23**	0.10 U	0.15 U	0.10 U	**0.82**	--	--	0.13 U	0.13 U	**1.5**	0.11 U	--	--	**2.9**	**0.88**
	11/18/20 to 12/02/20	**0.49**	--	**0.25**	0.071 U	0.10 U	0.069 U	**1.2**	--	--	0.087 U	0.090 U	**35**	0.077 U	--	--	**4.5**	**1.4**
Indoor-7	6/29/19 to 7/13/19	**0.24**	ND	**0.48***	ND	ND	ND	**0.22**	**0.27***	ND	**0.14**	**0.058**	**0.96**	0.046 U	**0.44**	**1***	**1.2**	**0.32**
	11/6/19 to 11/15/19	**0.46**	--	**0.26**	0.10 U	0.15 U	0.10 U	**0.87**	--	--	0.13 U	0.13 U	**1.5**	0.11 U	--	--	**3.1**	**0.92**
	11/18/20 to 12/02/20	**0.50**	--	**0.24**	0.071 U	0.10 U	0.069 U	**2.6**	--	--	**0.089**	**0.12**	**60**	0.077 U	--	--	**10**	**3.0**
Background	11/6/19 to 11/15/19	**0.40**	--	**0.26**	0.10 U	0.15 U	0.10 U	0.11 U	--	--	0.13 U	0.13 U	**0.49**	0.11 U	--	--	**0.27**	0.12 U
	11/18/20 to 12/02/20	**0.50**	--	**0.32**	0.071 U	0.10 U	0.069 U	**0.14**	--	--	0.087 U	0.090 U	**1.5**	0.077 U	--	--	**0.41**	**0.14**
DEQ Generic RBCs[2]																		
Inhalation																		
Occupational		1.6	22	2.0	0.53	1.1	0.47	4.9	130,000	1,200	4,400	47	22,000	2.9	260	260	440	

Notes:
1. Only VOCs detected with regulatory screening values are listed. For a complete listing of VOCs, refer to the laboratory report in Appendix B.
2. DEQ Generic RBCs dated May 2018
ND: not detected
U: Not detected. Reporting or detection limit shown.
Bolding indicates analyte detection.
--: not analyzed
*: Laboratory reported concentration as ng/sample because they do not have an uptake rate. Values shown were calculated by assuming an uptake rate of 1 percent.

TABLE 4
Summary of Groundwater Parameters in Monitoring Well Samples
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Sample I.D.	Sample Date	Temperature (°F)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Specific Conductivity (µS/cm)	Turbidity (NTU)	Ferrous Iron (mg/L)
MW-1	10/03/18	61.7	0.19	6.42	-74.9	673	0.44	--
	11/15/19	60.8	0.30	6.54	-99.9	505	4.99	28.8
	06/25/20	59.1	0.86	6.44	-55.9	628	2.22	--
MW-2	10/03/18	60.2	0.23	6.55	-124.5	791	0.51	--
	11/15/19	59.5	0.41	6.61	-118.1	670	0.10	64.6
	06/25/20	58.8	0.36	6.56	-73.1	664	2.12	--
MW-3	10/03/18	60.7	0.29	6.75	-49.5	427	0.28	--
	11/15/19	60.5	0.90	6.76	-81.5	444	7.54	13.1
	06/25/20	58.3	0.37	6.60	-38.6	380	5.45	--
MW-4	10/03/18	57.5	0.28	7.13	-62.0	362	0.30	--
	11/15/19	57.3	0.41	6.55	-110.5	440	0.53	53.8
	06/25/20	56.9	0.62	6.47	-56.6	488	8.72	--
MW-5	10/03/18	60.7	0.26	6.99	-54.1	304	0.24	--
	11/15/19	60.6	0.34	6.55	-84.7	354	0.86	26.9
	06/25/20	58.8	0.17	6.56	-58.8	268	3.50	--
MW-6	12/07/19	57.0	0.38	6.55	-87.6	607	2.71	--
	06/25/20	58.0	0.16	6.56	-82.6	652	4.72	--
MW-7	12/07/19	58.6	0.24	6.72	-105.2	672	2.29	--
	06/25/20	62.5	0.13	6.59	-99.8	691	9.58	--
MW-8	12/07/19	56.2	0.52	6.57	-86.2	587	3.67	--
	06/25/20	57.1	0.20	6.44	-72.5	535	3.79	--
PAS-2	12/07/19	59.9	0.38	6.86	-109.0	577	0.77	--

Note:
--: not analyzed

TABLE 5
Summary of Monitoring Well Groundwater Sample Chemical Analytical Results
Gasoline-Range Hydrocarbons and RBDM VOCs
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Monitoring Well	Sample Date	Gasoline-Range Hydrocarbons Method NWTPH-Gx (µg/L)	RBDM VOCs EPA Method 8260B/8260D (µg/L)											
			Benzene	1,2-Dibromoethane	1,2-Dichloroethane	Ethylbenzene	Isopropylbenzene	MTBE	Naphthalene	n-Propylbenzene	Toluene	1,2,4-TMB	1,3,5-TMB	Total Xylenes
MW-1	10/03/18	**19,900**	**1,000**	0.500 U	0.500 U	**1,090**	**98.4**	**11.5**	**397**	**83.1**	**25.1**	**54.5**	**40.6**	**196**
	11/15/19	**6,280**	**292**	5.00 U	5.00 U	**529**	**25.3**	**5.06**	**174**	**73.9**	**6.36**	**5.82**	5.00 U	**29.1**
	06/25/20	**12,100**	**854**	1.26 U	0.819 U	**1,720**	**83.8**	**9.69** J	**546**	**203**	**20.1**	**6.97** J	**8.90** J	**64.7**
MW-2	10/03/18	**34,500**	**2,320**	5.00 U	5.00 U	**1,690**	**89.6**	**26.0**	**465**	**277**	**52.3**	**1,650**	**370**	**3,180**
	11/15/19	**7,000**	**416**	10.0 U	10.0 U	**290**	**36.3**	**14.1**	**80.7**	**72.0**	**11.1**	**207**	**49.6**	**335**
	06/25/20	**6,160**	**625**	0.126 U	0.0819 U	**375**	**61.5**	**13.4**	**70.8**	**103**	**9.56**	**72.4**	**51.2**	**347**
MW-3	10/03/18	**148** B, J	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	**1.30**	2.50 U	0.500 U	0.500 U	0.500 U	0.500 U	1.50 U
	11/15/19	**370**	1.00 U	1.00 U	1.00 U	1.00 U	**4.19**	**6.68**	5.00 U	**1.23**	1.00 U	1.00 U	1.00 U	3.00 U
	06/25/20	**634** B	0.09 U	0.126 U	**0.0930** J	**13.9**	**21.3**	**2.47**	**3.10** J	**25.9**	**0.643** J	**0.742** J	**1.67**	**2.99** J
MW-4	10/03/18	**6,080**	**133**	0.500 U	0.500 U	**168**	**18.7**	**6.45**	**33.0**	**65.0**	**82.1**	**167**	**56.1**	**757**
	11/15/19	**10,600**	**561**	25.0 U	25.0 U	**493**	**30.5**	25.0 U	**133**	**80.3**	**90.0**	**456**	**113**	**1,660**
	06/25/20	**17,000**	**1,060**	2.52 U	1.64 U	**1,190**	**44.3**	**2.66** J	**247**	**102**	**138**	**660**	**179**	**3,420**
MW-5	10/03/18	**6,010**	**167**	0.500 U	0.500 U	**88.2**	**49.0**	0.500 U	**14.9**	**184**	**9.37**	**16.0**	**5.84**	**16.0**
	11/15/19	**3,420**	**83.5**	10.0 U	10.0 U	**48.2**	**23.8**	10.0 U	50.0 U	**79.8**	10.0	**10.4**	10.0 U	30.0 U
	06/25/20	**3,150**	**38.3**	0.126 U	0.0819 U	**90.6**	**31.6**	0.101 U	**29.2**	**76.4**	**7.79**	**5.86**	**3.37**	**13.0**
MW-6	12/07/19	**23,700**	**796**	10.0 U	10.0 U	**1,980**	**129**	**12.8**	**268**	**345**	**71.7**	**926**	**273**	**2,390**
	06/25/20	**72,200**	**681**	0.630 U	0.409 U	**459**	**78.8**	**16.8**	**102**	**171**	**37.5**	**258**	**94.5**	**582**
MW-7	12/07/19	**5,920**	**151**	1.00 U	1.00 U	**216**	**59.7**	**9.97**	**113**	**168**	**12.6**	**67.7**	**63.4**	**185**
	06/25/20	**7,610**	**556**	0.630 U	0.409 U	**586**	**102**	**15.2**	**355**	**217**	**15.4**	**11.6**	**96.8**	**207**
MW-8	12/07/19	**8,290**	**1,520**	1.00 U	1.00 U	**263**	**80.6**	**8.35**	**95.5**	**199**	**35.1**	**249**	**86.8**	**530**
	06/25/20	**2,840**	**2,330**	3.15 U	2.05 U	**1,900**	**131**	**6.24** J	**381**	**297**	**91.4**	**1,310**	**441**	**5,020**
PAS-2	12/07/19	**8,160**	**102**	1.00 U	1.00 U	**122**	**109**	**10.4**	**13.9**	**163**	**16.0**	10.0 U	**28.8**	**49.0**
DEQ Generic RBCs[1]														
Volatilization to Outdoor Air														
Occupational		>S	14,000	790	9,000	43,000	>S	1,500,000	16,000	NE	>S	>S	>S	>S
Vapor Intrusion into Buildings														
Occupational		>S	2,800	590	3,900	8,200	>S	870,000	11,000	NE	>S	>S	>S	>S
Groundwater in Excavation														
Construction/Excavation Worker		14,000	1,800	27	630	4,500	51,000	63,000	500	NE	220,000	6,300	7,500	23,000

Notes:
1. DEQ Generic RBCs dated May 2018
B: The same analyte is found in the associated blank.
J: The result is an estimated quantity.
NE: not established
>S: This groundwater RBC exceeds the solubility limit. Refer to Appendix D of DEQ's RBDM guidance document for the corresponding value of S. Groundwater concentrations in excess of S indicate that free product may be present.
U: Not detected. Reporting or detection limit shown.
Bolding indicates analyte detection.
Shading indicates analyte detection at a concentration greater than DEQ RBCs.
--: not analyzed

TABLE 6
Summary of Sub-Slab Vapor Sample Chemical Analytical Results
Gasoline-Range Hydrocarbons and VOCs
Former Astoria Warehousing Site
Astoria, Oregon

Sample I.D.	Sample Date	Gasoline-Range Hydrocarbons EPA Method TO-03/15 (µg/m³)	VOCs[1] EPA Method TO-15 (µg/m³)											
			Benzene	Ethylbenzene	iso-Propylbenzene	Naphthalene	2-Propanol	Styrene	Toluene	1,2,4-TMB	1,3,5-TMB	m,p-Xylene	o-Xylene
VP-1	09/24/18	**18,000**	**79**	**360**	**30**	**43**	17 U	6.4 U	**6.4**	**690**	**150**	**640**	
	06/28/19	32,000 U	2.3 U	2.3 U	2.3 U	2.3 U	9.4 U	2.4 U	**4.9**	2.4 U	2.4 U	4.9 U	2.4 U
	12/17/20	500 U	3.9 U	5.3 U	6.0 U	--	**56**	5.2 U	4.6 U	6.0 U	6.0 U	5.3 U	5.3 U
VP-2	09/24/18	**27,000**	**100**	**510**	**43**	**130**	17 U	6.0 U	**6.4**	**1,300**	**260**	**893**	
	06/28/19	33,000 U	2.4 U	2.4 U	2.4 U	2.3 U	**14**	2.4 U	**3.9**	2.4 U	2.4 U	5.0 U	2.4 U
	12/17/20	480 U	3.7 U	5.0 U	5.7 U	--	11 U	5.0 U	4.4 U	5.7 U	5.7 U	5.0 U	5.0 U
VP-3	09/24/18	**61,000,000**	**650,000**	**210,000**	7,500 U	32,000 U	3.9 U	1.3 U	**5,800** CN, J	**20,000**	**11,000**	**267,000**	
	06/28/19	**58,000,000**	**530,000**	**67,000**	9,500 U	9,100 U	38,000 U	9,500 U	9,500 U	**13,000**	9,500 U	**120,000**	9,500 U
	12/17/20	**57,000,000**	**470,000**	**210,000**	**5,900**	--	6,400 U	2,800 U	**2,700**	**62,000**	**25,000**	**240,000**	**4,400**
VP-4	09/24/18	**4,900,000**	**1,800**	**1,600**	380 U	1,600 U	750 U	320 U	290 U	**920**	**470**	**1,400**	
	06/28/19	**1,200,000**	130 U	130 U	130	130 U	520 U	130 U	130 U	130 U	130 U	270 U	130 U
	12/17/20	**6,100,000**	830 U	1,100 U	1,300 U	--	2,600 U	1,100 U	980 U	1,300 U	1,300 U	1,100 U	1,100 U
DEQ Generic RBCs[2]													
Vapor Intrusion into Buildings													
Occupational		1,700,000	1,600	4,900	1,800,000	360	NE	4,400,000	21,900,000	260,000	260,000	440,000	

Notes:
1. Only VOCs detected with regulatory screening values are listed. For a complete listing of VOCs, refer to the laboratory report in Appendix B.
2. DEQ Generic RBCs dated May 2018
CN: High concentration of VOCs required an off-line dilution using a Tedlar bag. Toluene is a common contaminant in Tedlar bags and a CN-flag was applied to indicate a high bias.
J: The result is an estimated quantity.
NE: not established
U: Not detected. Reporting or detection limit shown.
Bolding indicates analyte detection.
Shading indicates analyte detection at a concentration greater than DEQ RBCs.
--: not analyzed

TABLE 7
Vacuum Response Data
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Date	Time	Vacuum Pressure (iow)							
		OSVE-1	OSVE-2	OSVE-3	OSVE-4	VP-1	VP-2	VP-3	VP-4
12/18/20	BASELINE	-0.013	-0.014	-0.022	-0.015	-0.001	-0.001	-0.008	0.000
12/18/20	14:44	-5.74	-4.49	-4.532	-3.79	NM	NM	NM	NM
	16:10	-6.52	-5.05	-5.15	-4.23	-0.02	-0.03	-3.82	NM
	17:50	-6.15	-7.86	-6.27	-5.28	NM	NM	-4.65	NM
12/19/20	9:30	-12.03	-9.24	-9.31	-7.55	NM	NM	-7.11	NM
12/20/20	13:00	-12.95	-9.87	-9.75	-7.82	NM	NM	-7.27	NM
12/21/20	8:25	-13.05	-9.75	-9.55	-7.58	NM	-0.13	-9.16	NM
12/22/20	8:20	-13.00	-9.87	-9.70	-7.63	NM	-0.11	-7.15	NM
12/23/20	8:25	-13.20	-9.71	-9.56	-7.84	NM	-0.12	-6.96	NM
12/24/20	8:25	-12.96	-9.41	-9.20	-7.22	NM	-0.08	-6.78	NM
12/01/20	17:45	-13.17	-9.44	-9.30	-7.26	NM	-0.09	-6.82	NM
12/27/20	17:40	-13.27	-9.49	-9.32	-7.30	NM	-0.10	-6.80	NM
12/28/20	8:25	-13.20	-9.42	-9.27	-7.20	NM	-0.10	-6.75	NM
12/29/20	8:45	-13.08	-9.25	-9.17	-7.14	NM	-0.11	-6.71	NM
12/30/20	8:30	-13.22	-9.36	-9.26	-7.22	NM	-0.12	-6.80	NM
01/07/21	8:30	-13.62	-9.97	-9.70	-7.66	NM	-0.11	-7.13	NM
01/14/21	9:45	-13.91	-10.23	-10.02	-7.85	NM	-0.09	-7.33	NM
Average (excluding 12/18/20)		-13.13	-9.62	-9.47	-7.48	NC	-0.11	-7.14	NC

Notes:
NC: not calculated
NM: not measured

TABLE 8
SVE System Measurements
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Date	Time	Overall System							SVE-1		SVE-2		SVE-3	
		Total System Flow Rate[1] (cfm)	VFD (Hz/percentage)	Vacuum (inHg)	Exhaust Temperature (°F)	Stack Temperature (°F)	Fresh Air Dilution (percent)	Pre-Treatment PID Measurement (ppm)	Flow Rate (cfm)	Vacuum (iow)	Flow Rate (cfm)	Vacuum (iow)	Flow Rate (cfm)	Vacuum (iow)
12/18/20	14:20	368	60/100	--	1,450	1,641	50	560	140	-24	148	-24	80	-24
	16:15	291	60/100	--	1,443	1,646	37	--	112	-30	109	-30	70	-30
	17:53	350	60/100	--	--	--	30	590	132	-38	136	-38	82	-38
12/19/20	9:20	571	60/100	--	1,447	1,643	7	640	228	-58	223	-60	120	-59
12/20/20	13:00	648	60/100	--	1,436	1,651	0	491	311	-62	205	-64	132	-63
12/21/20	8:30	587	60/100	--	1,432	1,653	0	544	259	-60	190	-63	138	-62
12/22/20	8:35	561	60/100	-6.5	1,424	1,647	0	492	285	-60	172	-62	104	-61
12/23/20	8:15	557	60/100	-5.5	1,423	1,648	0	502	275	-60	170	-62	112	-61
12/24/20	8:10	614	60/100	-6.0	1,424	1,649	0	518	303	-59	206	-61	105	-60
12/01/20	17:30	588	60/100	-6.5	1,414	1,650	0	491	280	-58	200	-61	108	-60
12/27/20	17:15	557	60/100	-6.0	1,409	1,647	0	458	262	-59	170	-61	125	-60
12/28/20	8:15	585	60/100	-6.0	1,409	1,647	0	460	280	-58	195	-60	110	-59
12/29/20	8:30	595	60/100	-5.5	1,407	1,647	0	453	280	-58	206	-60	109	-59
12/30/20	8:15	553	60/100	-6.0	1,404	1,646	0	454	270	-58	170	-61	113	-59
01/07/21	8:15	581	60/100	-5.5	1,400	1,648	0	343	270	-62	196	-62	115	-64
01/14/21	9:35	616	60/100	-2.5	1,351	1,628	0	283	306	-64	215	-64	95	-62
Average (excluding 12/18/20)		586	--	-5.6	1,414	1,646	--	471	278	-60	194	-62	114	-61

Notes:
1. Total system flow rate calculated as the sum of individual SVE leg flow rates.
--: not measured or calculated

TABLE 9
SVE System Condition
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Date	System Operation	Visual Inpsection	Comments/Adjustments
12/18/20	Normal	No Issues	None
12/19/20	Normal	No Issues	None
12/20/20	Normal	No Issues	None
12/21/20	Normal	No Issues	None
12/22/20	Normal	No Issues	None
12/23/20	Normal	No Issues	None
12/24/20	Normal	No Issues	None
12/01/20	Normal	No Issues	None
12/27/20	Normal	No Issues	None
12/28/20	Normal	No Issues	None
12/29/20	Normal	No Issues	None
12/30/20	Normal	No Issues	None
01/07/21	Normal	No Issues	None
01/14/21	Normal	Excess water in knockout pot	Significant water in knockout pot from recent storm event. Water drained and containerized.

TABLE 10
Summary of Effluent Vapor Sample Chemical Analytical Results
Gasoline-Range Hydrocarbons and VOCs
Former Astoria Warehousing Site
Astoria, Oregon

Sample I.D.	Sample Date	Gasoline-Range Hydrocarbons EPA Method TO-15 (µg/m³)	VOCs[1] EPA Method TO-15 (µg/m³)																				
			Acetone	Benzene	Carbon Disulfide	Cyclohexane	Dichlorodifluoromethane	Trichlorofluoromethane	Ethanol	Ethylbenzene	4-Ethyltoluene	Heptane	n-Hexane	iso-Propylbenzene	Methylene Chloride (Dichloromethane)	Naphthalene	2-Propanol	Propene	Toluene	1,2,4-TMB	1,3,5-TMB	2,2,4-Trimethylpentane	m,p-Xylene	o-Xylene
Pre-Treatment Samples																							
PRE(121820)	12/18/20	**3,410,000**	**585**	**52,400**	49.8 U	**95,000**	79.1 U	89.9 U	**1,960**	**34,500**	**5,550**	**131,000**	**338,000**	**1,650**	55.6 U	264 U	**1,740**	**72.7**	**866**	**11,300**	**3,570**	**182,000**	**38,600**	**2,040**
PRE(122020)	12/20/20	**4,210,000**	**554**	**42,800**	49.8 U	**66,100**	79.1 U	89.9 U	**871**	**70,200**	**15,600**	**126,000**	**184,000**	**4,250**	55.6 U	264 U	**1,210**	**90.2** B	**1,440**	**30,200**	**7,850**	**144,000**	**78,500**	**4,510**
PRE(122720)	12/27/20	**1,650,000**	**366**	**13,400**	49.8 U	**17,900**	79.1 U	89.9 U	**338**	**30,300**	**10,500**	**60,500**	**77,900**	**2,600**	55.6 U	264 U	**1,050**	**55.8** B	**738**	**18,700**	**5,600**	**71,900**	**33,900**	**2,870**
PRE(011521)	01/15/21	**351,000**	**30.9**	**2,640**	0.622 U	**6,890**	**2.54**	**1.42**	**36.6**	**7,020**	**1,920**	**13,100**	**14,700**	**484** J4	0.694 U	**161**	**17.9**	**7.30**	**321**	**3,690**	**1,220**	**16,800**	**11,100**	**1,020**
Post-Treatment Sample																							
POST(011521)	01/15/21	**851**	**11.5**	0.639 U	**1.62**	0.689 U	0.989 U	1.12 U	1.190 U	0.867 U	**1.65**	0.818 U	0.630 U	0.983 U	**7.15**	3.30 U	3.07 U	0.689 U	**3.35**	**1.90**	0.982 U	0.934 U	**2.86**	**1.39**

Notes:
1. Only VOCs detected are listed. For a complete listing of VOCs, refer to the laboratory report in Appendix B.
B: The same analyte is found in the associated blank.
J4: The associated batch QC was outside the established quality control range for accuracy.
U: Not detected. Reporting or detection limit shown.
Bolding indicates analyte detection.

TABLE 11
Estimation of Contaminant Mass Removal
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Sample I.D.	Sample Date and Time	Interval Run Duration (minutes)	Total Run Duration (minutes)	Total Average Flow Rate (cfm)	Vapor Discharge Samples (µg/m³)		Contaminant Mass Removed for Interval (pounds)		Contaminant Mass Removal Rate for Interval (pounds per day)	
					Gasoline-Range Hydrocarbons	Benzene	Gasoline-Range Hydrocarbons	Benzene	Gasoline-Range Hydrocarbons	Benzene
PRE(121820)	12/18/20 15:09	189	189	586	3,410,000	52,400	23.57	0.36	179.5	2.76
PRE(122020)	12/20/20 13:32	2,783	2,972	586	4,210,000	42,800	428.41	4.36	221.7	2.25
PRE(122720)	12/27/20 17:22	10,310	13,282	586	1,650,000	13,400	622.03	5.05	86.9	0.71
PRE(011521)	1/15/21 12:44	27,082	40,364	586	351,000	2,640	347.58	2.61	18.5	0.14
						Totals	***1,422***	***12.38***		

APPENDIX A

CFBC 100

DESCRIPTION

CFBC 100 is a 100% solids base coat (first coat) epoxy floor topping designed for cool temperature applications commonly found in food and beverage processing facilities. The CFBC 100 system consists of a two component resin binder and graded aggregate. It is applied with a trowel, squeegee or screed rake in a one coat application including a silica broadcast. There is no need for a primer.

FUNCTION

The primary use of CFBC 100 is as a high strength floor topping for industrial service where severe mechanical abuse and/or chemical exposure is anticipated and where application temperatures between 45 deg. F. and 90 deg. F. are encountered. Typical applications include food processing plants, breweries, laboratories, chemical processing plants, waste disposal facilities, pulp and paper mills, refineries, mines, chemical storage areas and other industrial processing areas where chemicals are used.

FEATURES

CFBC 100 is a 100% solids system and allows for a fast application where good chemical and wear resistance are required. CFBC 100 can be installed over most sound floors including old or new concrete, steel and most types of repair mortars. At varying thickness up to 1/4 inches, the CFBC 100 system provides long term chemical resistance for splash and spill or immersion in many chemicals.

CFBC 100 provides excellent physical protection even in the harshest industrial settings. The physical properties of CFBC 100 are many times those of standard concrete.

Other features include:

- Rapid cure, resulting in minimal "downtime"
- 100% non-porous
- Very low odor
- Non-skid safety finish
- Can be applied in temperatures between 45 and 90 deg. F.

TYPICAL PROPERTIES

Solids, by Volume	100 %
Compressive Strength ASTM C579-82	12,000 psi
Flexural Strength ASTM C580-85	3,500 psi
Tensile Strength ASTM C307-83	1,500 psi
Bond Strength To Concrete ASTM D4541-89	Failure in Concrete
Taber Abrasion ASTM C501-80	25 ms loss/1000 cycles w/1000 gms. CS-17 Wheel
Water Absorption ASTM C413-93	maximum +0.10%

PACKAGING and COVERAGE

CFBC 100 is available in 1 gallon and 4 gallon kits. Each unit consists of pre-measured components, Part A (Resin) and Part B (Hardener). Graded aggregates are available or may be sourced locally.

Application thickness may vary from 1/8 to ¼ inches, depending on the expected service conditions. Factors to consider are 1) length of chemical exposure (i.e., immersion vs. splash/spill) and; 2) mechanical abuses (i.e., tow traffic, loaded trucks vs. cart and foot traffic, etc.).

CURE TIME

The cure time of CFBC 100 and other resinous systems are very dependent upon the temperature of the substrate. The ambient temperature may not be the same as the substrate temperature. For example during winter, concrete may be colder than the surrounding ambient temperature. As temperatures during the day my increase, large masses of concrete will be much slower to react. During summer days direct sunlight will increase the concrete temperature over that of ambient air. The substrate temperature

should be monitored and remain at or above 45 degrees F.

Service (hours)	45F	55F	65F
Foot Traffic	18	12	8
Light Chemical	18	18	12
Fork Lift	24	18	12
Heavy Chemical	7days	6days	3days

STORAGE and SHELF LIFE

CFBC 100 should be stored at 45-75 degrees F out of direct sunlight. All containers should remain unopened until ready for use. If stored as set out above, CFBC 100 has a minimum shelf life of one year.

WHERE CFBC 100 SHOULD NOT BE INSTALLED

CFBC 100 should not be applied over substrates:

- Subject to hydrostatic pressure.
- Unsound structures.
- Contaminated substrates which cannot be cleaned.
- At temperatures below 45 degrees F (Consult ChemProof Polymers).
- Which are wet during application.

SAFETY

CFBC 100 contains blended Epoxies as the resin and blended Amines as the hardener. Protective clothing and gloves are recommended to prevent sensitization to these materials. In case of ingestion or eye contact, it is advisable to contact a physician immediately. SDS are available for this product upon request.

WARRANTY

ChemProof Polymers, Inc. warrants that at the time of shipment, its products are free of defects in material and workmanship. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by ChemProof Polymers, Inc. ChemProof Polymers, Inc. makes no warranty concerning the suitability of its product for application to any surface, it being understood that the goods have been selected and the application ordered by the Owner/End User or Purchaser. CHEMPROOF POLYMERS, INC. MAKES NO WARRANTY, EXPRESS OR IMPLIED, THAT THE GOODS SHALL BE MERCHANTIBLE OR THAT THE GOODS ARE FIT FOR ANY PARTICULAR PURPOSE. THE WARRANTY OF REFUND OR REPLACEMENT SET FORTH HEREIN IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES ARISING BY LAW OR OTHERWISE; AND CHEMPROOF POLYMERS, INC. SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOST PROFITS, DOWN TIME, DAMAGES TO PROPERTY OF THE OWNER/END USER, PURCHASER OR OTHER PERSONS, OR DAMAGES FOR WHICH THE OWNER/END USER OR PURCHASER MAY BE LIABLE TO OTHER PERSONS, WHETHER OR NOT OCCASIONED BY CHEMPROOF POLYMERS, INC.'S NEGLIGENCE. This warranty shall not be extended, altered or varied except by written instrument signed by ChemProof Polymers, Inc. and Owner/End User or Purchaser.

The full product warranty is available from ChemProof Polymers, Inc.

CONTACT INFORMATION

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2750 Charles Page Blvd.
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Phone: 918-584-0364
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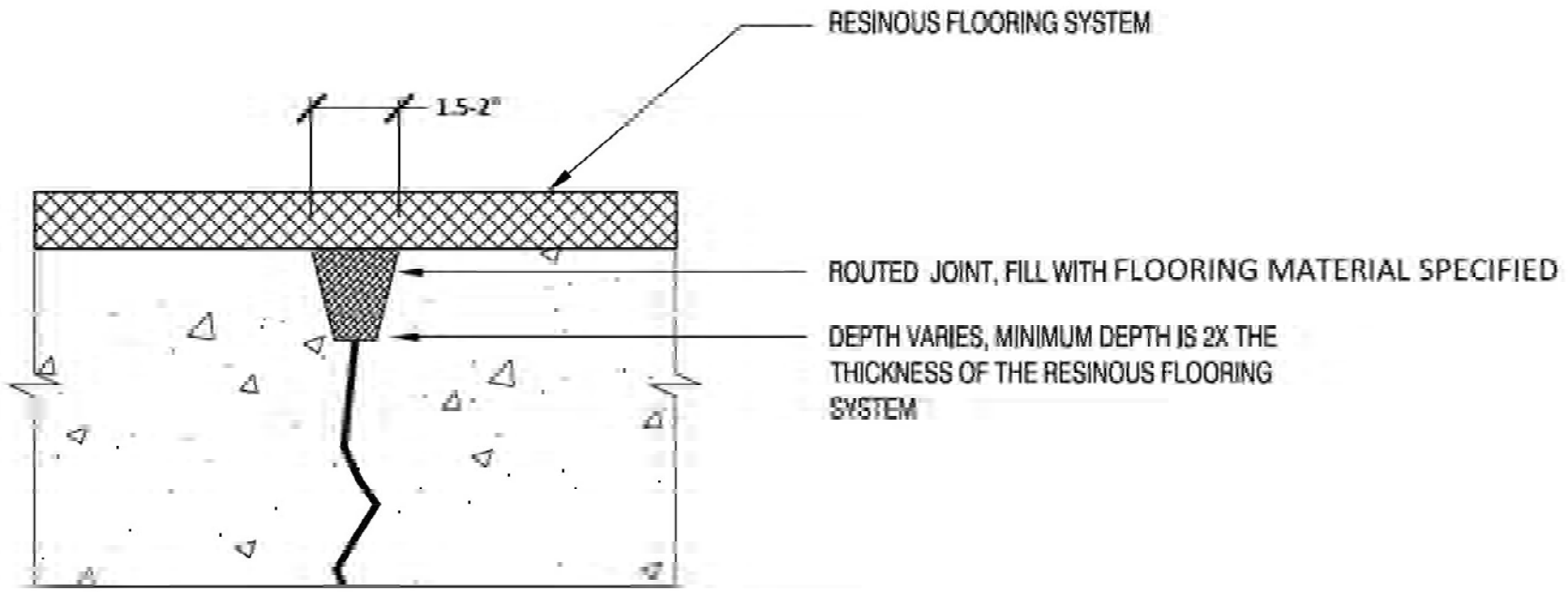
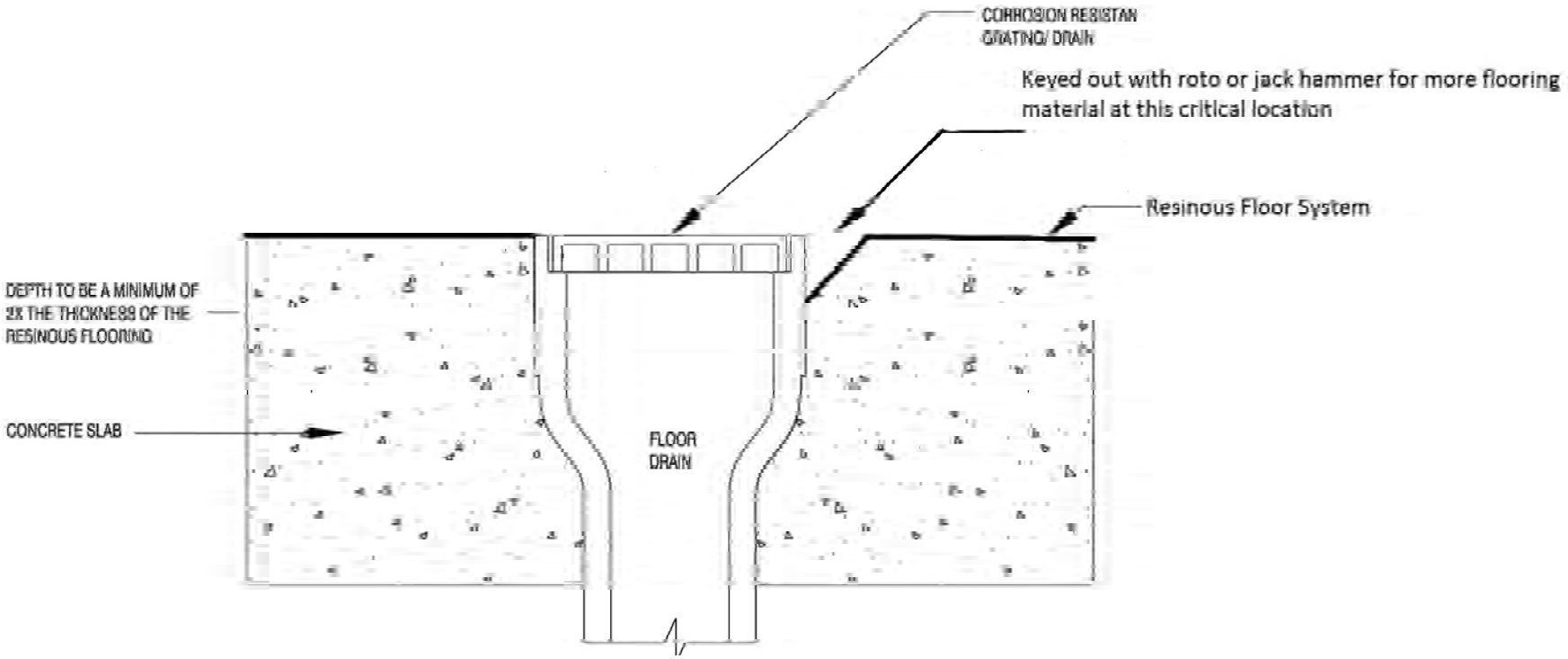


CONCRETE CRACK DETAIL

Cascade Floors Inc. 503-769-6823
http://www.cascadefloors.com



Cascade Floors Inc.
Drain details

APPENDIX B

INSTALLING EPOXY IN THE EAST PORTION OF THE FORMER CAN MANUFACTURING WAREHOUSE.

INSTALLING EPOXY IN THE EAST PORTION OF THE FORMER CAN MANUFACTURING WAREHOUSE.

GeoDesign Inc An NV5 Company	BIGBEAMS-1-04	**PROJECT SITE PHOTOGRAPHS**	
	MARCH 2021	FORMER ASTORIA WAREHOUSING SITE ASTORIA, OR	**FIGURE B-1**

NORTHEAST PORTION OF THE RIVERBANK ADJOINING THE PROJECT SITE. PHOTOGRAPH TAKEN FACING SOUTHEAST.

NORTH PORTION OF THE RIVERBANK ADJOINING THE PROJECT SITE. PHOTOGRAPH TAKEN FACING WEST.

GeoDesign Inc An NV5 Company	BIGBEAMS-1-04	**PROJECT SITE PHOTOGRAPHS**	
	MARCH 2021	FORMER ASTORIA WAREHOUSING SITE ASTORIA, OR	**FIGURE B-2**

SVE SYSTEM. PHOTOGRAPH TAKEN FACING WEST.

INSIDE THE SVE ENCLOSURE.

SVE SYSTEM. PHOTOGRAPH TAKEN FACING NORTH.

GEODESIGN INC AN NV5 COMPANY	BIGBEAMS-1-04	**PROJECT SITE PHOTOGRAPHS**	
	MARCH 2021	FORMER ASTORIA WAREHOUSING SITE ASTORIA, OR	**FIGURE B-4**

APPENDIX C

APPENDIX C

CHEMICAL ANALYTICAL PROGRAM

GENERAL

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

REVIEW OF ANALYTICAL DATA

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

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

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

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

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

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

SUMMARY OF ANALYTICAL DATA REVIEW

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

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12/14/2020
Mr. Kyle Haggart
GeoDesign, Inc.
9450 SW Commerce Circle
Suite 300
Wilsonville OR 97070

Project Name: BigBeams-1-04
Project #:
Workorder #: 2012089R1

Dear Mr. Kyle Haggart

The following report includes the data for the above referenced project for sample(s) received on 12/3/2020 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by Passive S.E. RAD130/SKC are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Alexandra Winslow at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Alexandra Winslow

Project Manager

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WORK ORDER #: 2012089R1

Work Order Summary

CLIENT:	Mr. Kyle Haggart GeoDesign, Inc. 9450 SW Commerce Circle Suite 300 Wilsonville, OR 97070	**BILL TO:**	Mr. Kyle Haggart GeoDesign, Inc. 9450 SW Commerce Circle Suite 300 Wilsonville, OR 97070
PHONE:	5035778288	**P.O. #**	
FAX:		**PROJECT #**	BigBeams-1-04
DATE RECEIVED:	12/03/2020	**CONTACT:**	Alexandra Winslow
DATE COMPLETED:	12/11/2020		
DATE REISSUED:	12/14/2020		

FRACTION #	NAME	TEST
01A	Indoor-1	Passive S.E. RAD130/SKC
02A	Indoor-2	Passive S.E. RAD130/SKC
03A	Indoor-3	Passive S.E. RAD130/SKC
04A	Indoor-4	Passive S.E. RAD130/SKC
05A	Indoor-5	Passive S.E. RAD130/SKC
06A	Indoor-6	Passive S.E. RAD130/SKC
07A	Indoor-7	Passive S.E. RAD130/SKC
08A	Background	Passive S.E. RAD130/SKC
09A	Lab Blank	Passive S.E. RAD130/SKC
10A	LCS	Passive S.E. RAD130/SKC
10AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY: Heidi Hayes DATE: 12/14/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
GeoDesign, Inc.
Workorder# 2012089R1

Eight Radiello 130 (Solvent) samples were received on December 03, 2020. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value. Results are not corrected for desorption efficiency.

The reference method used for this procedure is EPA TO-17, which describes the collection of VOCs in ambient air using sorbents and analysis by GC/MS. Because TO-17 describes active sample collection using a pump and thermal desorption as the preparation step, several modifications are required. Modifications to TO-17 are listed in the table below:

Requirement	***TO-17***	***ATL Modifications***
Sample Collection	Pump pulls measured air volume through sorbent tube	VOCs in air adsorbed onto sorbent bed passively through diffusion
Sample Preparation	Thermal extraction	Solvent extraction
Sorbent tube conditioning	Condition newly packed tubes prior to use	Charcoal-based sorbent is a single use media and conditioning is conducted by vendor.
Instrumentation	Thermal desorption introduction system	Liquid injection introduction system
Internal Standard	Gas-phase internal standard introduced on the tube or focusing trap during analysis	Liquid-phase internal standard introduced on the tube at the time of extraction
Media and sample storage	<4 deg C, 30 days	Media shelf life is determined by vendor; sample hold-time is 6 months for the RAD130 and WMS. Sample preservation requirements are storage in a cool, solvent-free refrigerator and optional use of ice during shipping.
Internal Standard Recovery	+/-40% of daily CCV area	-50% to +100% of daily CCV area

Receiving Notes

Sample collection date was incomplete on the Chain of Custody for all samples. The year of collection was assumed to be 2020.

Analytical Notes

The uptake rates were corrected based on average field temperatures if provided. In the absence of

field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m3 concentrations in the Lab Blank, a sampling duration of 20068 minutes was applied. The assumed temperature used for the uptake rate is listed on the data page. If the field temperatures were provided, the rate was adjusted in the same manner as the field samples.

Per client's request, the work order was reissued on 12/14/2020 to use the temperatures provided by the client via email on 12/11/2020.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

C - Estimated concentration due to calculated sampling rate

CN - See case narrative explanation.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Indoor-1

Lab ID#: 2012089R1-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.50	55	28
Hexane	0.10	0.077	31	24
Ethyl Acetate	0.40	0.26	1.2	0.76
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	23	15
Chloroform	0.10	0.068	0.41	0.28
Cyclohexane	0.10	0.095	8.3	7.9
Carbon Tetrachloride	0.10	0.076	0.61	0.47
Benzene	0.40	0.26	1.1	0.69
1,2-Dichloroethane	0.10	0.066	0.12	0.082
Heptane	0.10	0.088	3.4	3.0
4-Methyl-2-pentanone	0.20	0.15	1.2	0.94
Toluene	0.10	0.069	37	26
Ethyl Benzene	0.10	0.075	2.7	2.0
m,p-Xylene	0.10	0.073	11	8.1
o-Xylene	0.10	0.079	3.2	2.5
Styrene	0.10	0.084	0.21	0.17
Propylbenzene	0.10	0.090	0.14	0.12

Client Sample ID: Indoor-2

Lab ID#: 2012089R1-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.50	46	23
Hexane	0.10	0.077	29	23
Ethyl Acetate	0.40	0.26	1.0	0.69
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	21	14
Chloroform	0.10	0.068	0.40	0.27
Cyclohexane	0.10	0.095	8.2	7.8
Carbon Tetrachloride	0.10	0.076	0.67	0.51
Benzene	0.40	0.26	1.2	0.73
1,2-Dichloroethane	0.10	0.066	0.12	0.082
Heptane	0.10	0.088	3.2	2.8
4-Methyl-2-pentanone	0.20	0.15	1.3	0.97

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Indoor-2

Lab ID#: 2012089R1-02A

Toluene	0.10	0.069	34	24
Ethyl Benzene	0.10	0.075	2.3	1.7
m,p-Xylene	0.10	0.073	9.3	6.8
o-Xylene	0.10	0.079	2.7	2.1
Styrene	0.10	0.084	0.18	0.15
Propylbenzene	0.10	0.090	0.13	0.12

Client Sample ID: Indoor-3

Lab ID#: 2012089R1-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	6.9	3.6
Hexane	0.10	0.080	41	33
Ethyl Acetate	0.40	0.27	1.0	0.72
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	22	15
Cyclohexane	0.10	0.098	0.79	0.77
Carbon Tetrachloride	0.10	0.079	0.30	0.24
Benzene	0.40	0.26	0.75	0.50
Heptane	0.10	0.091	1.1	1.0
Trichloroethene	0.10	0.077	0.12	0.096
4-Methyl-2-pentanone	0.20	0.16	1.9	1.5
Toluene	0.10	0.072	78	56
Tetrachloroethene	0.10	0.090	0.10	0.092
Ethyl Benzene	0.10	0.078	2.9	2.3
m,p-Xylene	0.10	0.076	12	8.8
o-Xylene	0.10	0.082	3.2	2.6
Propylbenzene	0.10	0.093	0.20	0.18

Client Sample ID: Indoor-4

Lab ID#: 2012089R1-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	7.4	3.8
Hexane	0.10	0.080	56	45

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Indoor-4

Lab ID#: 2012089R1-04A

Ethyl Acetate	0.40	0.27	1.0	0.70
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	34	22
Cyclohexane	0.10	0.098	0.84	0.82
Carbon Tetrachloride	0.10	0.079	0.32	0.26
Benzene	0.40	0.26	0.79	0.52
Heptane	0.10	0.091	1.0	0.97
Trichloroethene	0.10	0.077	0.15	0.11
4-Methyl-2-pentanone	0.20	0.16	1.7	1.3
Toluene	0.10	0.072	93	67
Tetrachloroethene	0.10	0.090	0.10	0.091
Ethyl Benzene	0.10	0.078	2.7	2.1
m,p-Xylene	0.10	0.076	11	8.1
o-Xylene	0.10	0.082	3.0	2.4
Propylbenzene	0.10	0.093	0.19	0.17

Client Sample ID: Indoor-5

Lab ID#: 2012089R1-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	2.7	1.4
Hexane	0.10	0.080	24	20
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	20	13
Cyclohexane	0.10	0.098	0.81	0.79
Carbon Tetrachloride	0.10	0.079	0.34	0.27
Benzene	0.40	0.26	0.86	0.57
Heptane	0.10	0.091	0.83	0.76
4-Methyl-2-pentanone	0.20	0.16	0.74	0.59
Toluene	0.10	0.072	37	26
Ethyl Benzene	0.10	0.078	1.1	0.84
m,p-Xylene	0.10	0.076	4.1	3.1
o-Xylene	0.10	0.082	1.2	0.94
Propylbenzene	0.10	0.093	0.12	0.11

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Indoor-6

Lab ID#: 2012089R1-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	3.1	1.6
Hexane	0.10	0.080	31	25
Ethyl Acetate	0.40	0.27	0.47	0.32
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	24	16
Cyclohexane	0.10	0.098	0.66	0.65
Carbon Tetrachloride	0.10	0.079	0.32	0.25
Benzene	0.40	0.26	0.74	0.49
Heptane	0.10	0.091	0.64	0.58
4-Methyl-2-pentanone	0.20	0.16	1.2	0.97
Toluene	0.10	0.072	50	35
Ethyl Benzene	0.10	0.078	1.5	1.2
m,p-Xylene	0.10	0.076	5.9	4.5
o-Xylene	0.10	0.082	1.7	1.4
Propylbenzene	0.10	0.093	0.15	0.14

Client Sample ID: Indoor-7

Lab ID#: 2012089R1-07A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	6.4	3.3
Hexane	0.10	0.080	44	35
Ethyl Acetate	0.40	0.27	1.1	0.77
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	22	15
Cyclohexane	0.10	0.098	0.81	0.79
Carbon Tetrachloride	0.10	0.079	0.30	0.24
Benzene	0.40	0.26	0.76	0.50
Heptane	0.10	0.091	1.2	1.1
4-Methyl-2-pentanone	0.20	0.16	2.1	1.7
Toluene	0.10	0.072	84	60
Tetrachloroethene	0.10	0.090	0.13	0.12
Ethyl Benzene	0.10	0.078	3.4	2.6
m,p-Xylene	0.10	0.076	14	10
o-Xylene	0.10	0.082	3.7	3.0

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Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Indoor-7

Lab ID#: 2012089R1-07A

Styrene	0.10	0.087	0.10	0.089
Propylbenzene	0.10	0.093	0.22	0.21

Client Sample ID: Background

Lab ID#: 2012089R1-08A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	0.080	1.4	1.1
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.56	0.38
Cyclohexane	0.10	0.098	0.13	0.13
Carbon Tetrachloride	0.10	0.079	0.41	0.32
Benzene	0.40	0.26	0.76	0.50
Heptane	0.10	0.091	0.15	0.13
Toluene	0.10	0.072	2.1	1.5
Ethyl Benzene	0.10	0.078	0.18	0.14
m,p-Xylene	0.10	0.076	0.58	0.44
o-Xylene	0.10	0.082	0.18	0.15

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Client Sample ID: Indoor-1

Lab ID#: 2012089R1-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c120710sim**	**Date of Collection: 12/2/20 9:57:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/7/20 01:31 PM**	
		Date of Extraction: 12/7/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.50	55	28
Methyl tert-butyl ether	0.10	0.079	Not Detected	Not Detected
Hexane	0.10	0.077	31	24
Ethyl Acetate	0.40	0.26	1.2	0.76
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	23	15
Chloroform	0.10	0.068	0.41	0.28
1,1,1-Trichloroethane	0.10	0.082	Not Detected	Not Detected
Cyclohexane	0.10	0.095	8.3	7.9
Carbon Tetrachloride	0.10	0.076	0.61	0.47
Benzene	0.40	0.26	1.1	0.69
1,2-Dichloroethane	0.10	0.066	0.12	0.082
Heptane	0.10	0.088	3.4	3.0
Trichloroethene	0.10	0.074	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	1.2	0.94
Toluene	0.10	0.069	37	26
Tetrachloroethene	0.10	0.087	Not Detected	Not Detected
Chlorobenzene	0.10	0.075	Not Detected	Not Detected
Ethyl Benzene	0.10	0.075	2.7	2.0
m,p-Xylene	0.10	0.073	11	8.1
o-Xylene	0.10	0.079	3.2	2.5
Styrene	0.10	0.084	0.21	0.17
Propylbenzene	0.10	0.090	0.14	0.12
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 68.0F , duration time = 20063 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: Indoor-2

Lab ID#: 2012089R1-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c120711sim**	**Date of Collection: 12/2/20 10:00:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/7/20 01:57 PM**	
		Date of Extraction: 12/7/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.50	46	23
Methyl tert-butyl ether	0.10	0.079	Not Detected	Not Detected
Hexane	0.10	0.077	29	23
Ethyl Acetate	0.40	0.26	1.0	0.69
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	21	14
Chloroform	0.10	0.068	0.40	0.27
1,1,1-Trichloroethane	0.10	0.082	Not Detected	Not Detected
Cyclohexane	0.10	0.095	8.2	7.8
Carbon Tetrachloride	0.10	0.076	0.67	0.51
Benzene	0.40	0.26	1.2	0.73
1,2-Dichloroethane	0.10	0.066	0.12	0.082
Heptane	0.10	0.088	3.2	2.8
Trichloroethene	0.10	0.074	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	1.3	0.97
Toluene	0.10	0.069	34	24
Tetrachloroethene	0.10	0.087	Not Detected	Not Detected
Chlorobenzene	0.10	0.075	Not Detected	Not Detected
Ethyl Benzene	0.10	0.075	2.3	1.7
m,p-Xylene	0.10	0.073	9.3	6.8
o-Xylene	0.10	0.079	2.7	2.1
Styrene	0.10	0.084	0.18	0.15
Propylbenzene	0.10	0.090	0.13	0.12
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 68.0F , duration time = 20064 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: Indoor-3

Lab ID#: 2012089R1-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120706sim**	**Date of Collection: 12/2/20 10:04:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/7/20 03:26 PM**	
		Date of Extraction: 12/7/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	6.9	3.6
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	41	33
Ethyl Acetate	0.40	0.27	1.0	0.72
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	22	15
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.79	0.77
Carbon Tetrachloride	0.10	0.079	0.30	0.24
Benzene	0.40	0.26	0.75	0.50
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	1.1	1.0
Trichloroethene	0.10	0.077	0.12	0.096
4-Methyl-2-pentanone	0.20	0.16	1.9	1.5
Toluene	0.10	0.072	78	56
Tetrachloroethene	0.10	0.090	0.10	0.092
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	2.9	2.3
m,p-Xylene	0.10	0.076	12	8.8
o-Xylene	0.10	0.082	3.2	2.6
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	0.20	0.18
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 55.4F , duration time = 20066 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: Indoor-4

Lab ID#: 2012089R1-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120707sim**	**Date of Collection: 12/2/20 10:06:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/7/20 03:52 PM**	
		Date of Extraction: 12/7/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	7.4	3.8
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	56	45
Ethyl Acetate	0.40	0.27	1.0	0.70
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	34	22
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.84	0.82
Carbon Tetrachloride	0.10	0.079	0.32	0.26
Benzene	0.40	0.26	0.79	0.52
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	1.0	0.97
Trichloroethene	0.10	0.077	0.15	0.11
4-Methyl-2-pentanone	0.20	0.16	1.7	1.3
Toluene	0.10	0.072	93	67
Tetrachloroethene	0.10	0.090	0.10	0.091
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	2.7	2.1
m,p-Xylene	0.10	0.076	11	8.1
o-Xylene	0.10	0.082	3.0	2.4
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	0.19	0.17
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 55.4F , duration time = 20066 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

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Client Sample ID: Indoor-5

Lab ID#: 2012089R1-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120708sim**	**Date of Collection: 12/2/20 10:13:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/7/20 04:17 PM**	
		Date of Extraction: 12/7/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	2.7	1.4
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	24	20
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	20	13
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.085	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.81	0.79
Carbon Tetrachloride	0.10	0.079	0.34	0.27
Benzene	0.40	0.26	0.86	0.57
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.83	0.76
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	0.74	0.59
Toluene	0.10	0.072	37	26
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	1.1	0.84
m,p-Xylene	0.10	0.076	4.1	3.1
o-Xylene	0.10	0.082	1.2	0.94
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	0.12	0.11
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 55.4F , duration time = 20068 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: Indoor-6

Lab ID#: 2012089R1-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120709sim**	**Date of Collection: 12/2/20 10:11:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/7/20 04:43 PM**	
		Date of Extraction: 12/7/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	3.1	1.6
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	31	25
Ethyl Acetate	0.40	0.27	0.47	0.32
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	24	16
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.66	0.65
Carbon Tetrachloride	0.10	0.079	0.32	0.25
Benzene	0.40	0.26	0.74	0.49
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.64	0.58
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	1.2	0.97
Toluene	0.10	0.072	50	35
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	1.5	1.2
m,p-Xylene	0.10	0.076	5.9	4.5
o-Xylene	0.10	0.082	1.7	1.4
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	0.15	0.14
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 55.4F , duration time = 20061 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: Indoor-7

Lab ID#: 2012089R1-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120710sim**	**Date of Collection: 12/2/20 10:08:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/7/20 05:08 PM**	
		Date of Extraction: 12/7/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	6.4	3.3
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	44	35
Ethyl Acetate	0.40	0.27	1.1	0.77
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	22	15
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.81	0.79
Carbon Tetrachloride	0.10	0.079	0.30	0.24
Benzene	0.40	0.26	0.76	0.50
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	1.2	1.1
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	2.1	1.7
Toluene	0.10	0.072	84	60
Tetrachloroethene	0.10	0.090	0.13	0.12
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	3.4	2.6
m,p-Xylene	0.10	0.076	14	10
o-Xylene	0.10	0.082	3.7	3.0
Styrene	0.10	0.087	0.10	0.089
Propylbenzene	0.10	0.093	0.22	0.21
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 55.4F , duration time = 20055 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: Background

Lab ID#: 2012089R1-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**18120711sim**	**Date of Collection: 12/2/20 10:16:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/7/20 05:34 PM**	
		Date of Extraction: 12/7/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.52	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.082	Not Detected	Not Detected
Hexane	0.10	0.080	1.4	1.1
Ethyl Acetate	0.40	0.27	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	0.56	0.38
Chloroform	0.10	0.071	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.086	Not Detected	Not Detected
Cyclohexane	0.10	0.098	0.13	0.13
Carbon Tetrachloride	0.10	0.079	0.41	0.32
Benzene	0.40	0.26	0.76	0.50
1,2-Dichloroethane	0.10	0.069	Not Detected	Not Detected
Heptane	0.10	0.091	0.15	0.13
Trichloroethene	0.10	0.077	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.16	Not Detected	Not Detected
Toluene	0.10	0.072	2.1	1.5
Tetrachloroethene	0.10	0.090	Not Detected	Not Detected
Chlorobenzene	0.10	0.078	Not Detected	Not Detected
Ethyl Benzene	0.10	0.078	0.18	0.14
m,p-Xylene	0.10	0.076	0.58	0.44
o-Xylene	0.10	0.082	0.18	0.15
Styrene	0.10	0.087	Not Detected	Not Detected
Propylbenzene	0.10	0.093	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.21	Not Detected	Not Detected

Temperature = 55.4F , duration time = 20061 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	85	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2012089R1-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c120706sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/7/20 11:45 AM**	
		Date of Extraction: 12/7/20	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.50	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.079	Not Detected	Not Detected
Hexane	0.10	0.077	Not Detected	Not Detected
Ethyl Acetate	0.40	0.26	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	Not Detected	Not Detected
Chloroform	0.10	0.068	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.082	Not Detected	Not Detected
Cyclohexane	0.10	0.095	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.076	Not Detected	Not Detected
Benzene	0.40	0.26	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.066	Not Detected	Not Detected
Heptane	0.10	0.088	Not Detected	Not Detected
Trichloroethene	0.10	0.074	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.069	Not Detected	Not Detected
Tetrachloroethene	0.10	0.087	Not Detected	Not Detected
Chlorobenzene	0.10	0.075	Not Detected	Not Detected
Ethyl Benzene	0.10	0.075	Not Detected	Not Detected
m,p-Xylene	0.10	0.073	Not Detected	Not Detected
o-Xylene	0.10	0.079	Not Detected	Not Detected
Styrene	0.10	0.084	Not Detected	Not Detected
Propylbenzene	0.10	0.090	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.10	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 68.0F , duration time = 20068 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	83	70-130

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Client Sample ID: LCS

Lab ID#: 2012089R1-10A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c120703sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/7/20 10:16 AM**	
		Date of Extraction: 12/7/20	

Compound	%Recovery	Method Limits
Ethanol	54	50-130
Methyl tert-butyl ether	117	70-130
Hexane	96	70-130
Ethyl Acetate	109	70-130
2-Butanone (Methyl Ethyl Ketone)	96	70-130
Chloroform	112	70-130
1,1,1-Trichloroethane	119	70-130
Cyclohexane	111	70-130
Carbon Tetrachloride	121	70-130
Benzene	94	70-130
1,2-Dichloroethane	106	70-130
Heptane	103	70-130
Trichloroethene	113	70-130
4-Methyl-2-pentanone	116	70-130
Toluene	97	70-130
Tetrachloroethene	120	70-130
Chlorobenzene	113	70-130
Ethyl Benzene	94	70-130
m,p-Xylene	98	70-130
o-Xylene	95	70-130
Styrene	78	20-100
Propylbenzene	120	70-130
1,4-Dichlorobenzene	97	50-110
Naphthalene	19	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Client Sample ID: LCSD

Lab ID#: 2012089R1-10AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c120705sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/7/20 11:18 AM**	
		Date of Extraction: 12/7/20	

Compound	%Recovery	Method Limits
Ethanol	51	50-130
Methyl tert-butyl ether	118	70-130
Hexane	95	70-130
Ethyl Acetate	111	70-130
2-Butanone (Methyl Ethyl Ketone)	96	70-130
Chloroform	113	70-130
1,1,1-Trichloroethane	120	70-130
Cyclohexane	107	70-130
Carbon Tetrachloride	121	70-130
Benzene	94	70-130
1,2-Dichloroethane	106	70-130
Heptane	104	70-130
Trichloroethene	113	70-130
4-Methyl-2-pentanone	117	70-130
Toluene	97	70-130
Tetrachloroethene	121	70-130
Chlorobenzene	113	70-130
Ethyl Benzene	94	70-130
m,p-Xylene	97	70-130
o-Xylene	94	70-130
Styrene	78	20-100
Propylbenzene	119	70-130
1,4-Dichlorobenzene	96	50-110
Naphthalene	18	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	84	70-130

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Analysis Request /Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: 2012089

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

page--of ---

Client: GeoDesign Inc
Project Name: [redacted] BigBeams-1-04
Project Manager: Kyle Hugget
Project #: _____
Sampler: Kyle Hugget
Site Name: _____

Special Instructions/Notes:

Turnaround Time (Rush surcharges may apply)
Standard _____ Rush _____ (specify)

Lab ID	Field Sample Identification(Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Canister Vacuum/Pressure		Lab Use Only		Requested Analyses			
				Date	Time	Date	Time	Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N_2 / He	Full List TO-15			
01A	Indoor-1	W419C		11.18	1134	12.2	957					X			
02A	Indoor-2	W920C		11.18	1136	12.2	1000					X			
03A	Indoor-3	J1005		11.18	1138	12.2	1004					X			
04A	Indoor-4	J1015		11.18	1140	12.2	1006					X			
05A	Indoor-5	W921C		11.18	1145	12.2	1013					X			
06A	Indoor-6	J0985		11.18	1150	12.2	1011					X			
07A	Indoor-7	J0995		11.18	1153	12.2	1008					X			
08A	Background	J1025		11.18	1155	12.2	1016					X			

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
[signature]	12.2.20	1410	[signature] EATL	12-3-2020	1201
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: Fed Ex | Custody Seals Intact? | Yes | No | None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

ANALYTICAL REPORT

July 09, 2020

GeoDesign Inc. - Wilsonville, OR

Sample Delivery Group:	L1234402
Samples Received:	06/27/2020
Project Number:	BigBeams-1-04
Description:	Former Astoria Wave Housing

Report To:

Kyle Haggart
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Entire Report Reviewed By:

Brian Ford
Project Manager

TABLE OF CONTENTS

MW-1(062520) L1234402-01 GW

Collected by: Tim Hainley | Collected date/time: 06/25/20 08:35 | Received date/time: 06/27/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1504904	5	07/07/20 15:10	07/07/20 15:10	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1503196	10	07/03/20 03:13	07/03/20 03:13	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1505031	10	07/07/20 15:53	07/07/20 15:53	JHH	Mt. Juliet, TN

MW-2(062520) L1234402-02 GW

Collected by: Tim Hainley | Collected date/time: 06/25/20 09:10 | Received date/time: 06/27/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1503740	1	07/04/20 03:54	07/04/20 03:54	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1501977	1	07/01/20 01:53	07/01/20 01:53	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1503196	10	07/03/20 03:32	07/03/20 03:32	ACG	Mt. Juliet, TN

MW-3(062520) L1234402-03 GW

Collected by: Tim Hainley | Collected date/time: 06/25/20 07:57 | Received date/time: 06/27/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1503762	1	07/03/20 22:49	07/03/20 22:49	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1501977	1	07/01/20 02:13	07/01/20 02:13	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1503196	1	07/02/20 23:55	07/02/20 23:55	ACG	Mt. Juliet, TN

MW-4(062520) L1234402-04 GW

Collected by: Tim Hainley | Collected date/time: 06/25/20 10:25 | Received date/time: 06/27/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1505160	10	07/07/20 19:59	07/07/20 19:59	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1503196	20	07/03/20 03:52	07/03/20 03:52	ACG	Mt. Juliet, TN

MW-5(062520) L1234402-05 GW

Collected by: Tim Hainley | Collected date/time: 06/25/20 11:25 | Received date/time: 06/27/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1503762	1	07/03/20 23:33	07/03/20 23:33	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1503196	1	07/03/20 00:15	07/03/20 00:15	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1505031	1	07/07/20 15:34	07/07/20 15:34	JHH	Mt. Juliet, TN

MW-7(062520) L1234402-06 GW

Collected by: Tim Hainley | Collected date/time: 06/25/20 14:25 | Received date/time: 06/27/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1503762	1	07/03/20 23:55	07/03/20 23:55	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1503196	5	07/03/20 04:12	07/03/20 04:12	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1505031	5	07/07/20 16:12	07/07/20 16:12	JHH	Mt. Juliet, TN

MW-8(062520) L1234402-07 GW

Collected by: Tim Hainley | Collected date/time: 06/25/20 12:50 | Received date/time: 06/27/20 08:45

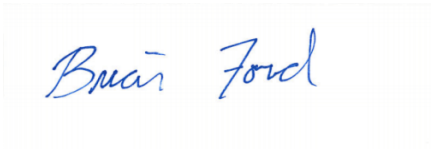
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1503762	1	07/04/20 04:44	07/04/20 04:44	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1503196	25	07/03/20 04:32	07/03/20 04:32	ACG	Mt. Juliet, TN

MW-6(062520) L1234402-08 GW

Collected by: Tim Hainley
Collected date/time: 06/25/20 13:20
Received date/time: 06/27/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1503762	10	07/04/20 00:17	07/04/20 00:17	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1503196	5	07/03/20 04:52	07/03/20 04:52	ACG	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

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	12100		158	500	5	07/07/2020 15:10	WG1504904
(S) a,a,a-Trifluorotoluene(FID)	*98.6*			*78.0-120*		*07/07/2020 15:10*	WG1504904

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	854		0.941	10.0	10	07/03/2020 03:13	WG1503196
Ethylbenzene	1720		1.37	10.0	10	07/03/2020 03:13	WG1503196
Toluene	20.1		2.78	10.0	10	07/03/2020 03:13	WG1503196
Xylenes, Total	64.7		1.74	30.0	10	07/03/2020 03:13	WG1503196
Methyl tert-butyl ether	9.69	J	1.01	10.0	10	07/03/2020 03:13	WG1503196
Naphthalene	546		10.0	50.0	10	07/07/2020 15:53	WG1505031
1,2-Dibromoethane	U		1.26	10.0	10	07/03/2020 03:13	WG1503196
1,2-Dichloroethane	U		0.819	10.0	10	07/03/2020 03:13	WG1503196
Isopropylbenzene	83.8		1.05	10.0	10	07/03/2020 03:13	WG1503196
n-Propylbenzene	203		0.993	10.0	10	07/03/2020 03:13	WG1503196
1,2,4-Trimethylbenzene	6.97	J	3.22	10.0	10	07/03/2020 03:13	WG1503196
1,3,5-Trimethylbenzene	8.90	J	1.04	10.0	10	07/03/2020 03:13	WG1503196
(S) Toluene-d8	*109*			*80.0-120*		*07/03/2020 03:13*	WG1503196
(S) Toluene-d8	*101*			*80.0-120*		*07/07/2020 15:53*	WG1505031
(S) 4-Bromofluorobenzene	*99.1*			*77.0-126*		*07/03/2020 03:13*	WG1503196
(S) 4-Bromofluorobenzene	*100*			*77.0-126*		*07/07/2020 15:53*	WG1505031
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*		*07/03/2020 03:13*	WG1503196
(S) 1,2-Dichloroethane-d4	*122*			*70.0-130*		*07/07/2020 15:53*	WG1505031

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	6160		31.6	100	1	07/04/2020 03:54	WG1503740
(S) a,a,a-Trifluorotoluene(FID)	*86.8*			*78.0-120*		*07/04/2020 03:54*	WG1503740

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	625		0.941	10.0	10	07/03/2020 03:32	WG1503196
Ethylbenzene	375		1.37	10.0	10	07/03/2020 03:32	WG1503196
Toluene	9.56		0.278	1.00	1	07/01/2020 01:53	WG1501977
Xylenes, Total	347		1.74	30.0	10	07/03/2020 03:32	WG1503196
Methyl tert-butyl ether	13.4		0.101	1.00	1	07/01/2020 01:53	WG1501977
Naphthalene	70.8		1.00	5.00	1	07/01/2020 01:53	WG1501977
1,2-Dibromoethane	U		0.126	1.00	1	07/01/2020 01:53	WG1501977
1,2-Dichloroethane	U		0.0819	1.00	1	07/01/2020 01:53	WG1501977
Isopropylbenzene	61.5		0.105	1.00	1	07/01/2020 01:53	WG1501977
n-Propylbenzene	103		0.993	10.0	10	07/03/2020 03:32	WG1503196
1,2,4-Trimethylbenzene	72.4		0.322	1.00	1	07/01/2020 01:53	WG1501977
1,3,5-Trimethylbenzene	51.2		0.104	1.00	1	07/01/2020 01:53	WG1501977
(S) Toluene-d8	*103*			*80.0-120*		*07/01/2020 01:53*	WG1501977
(S) Toluene-d8	*108*			*80.0-120*		*07/03/2020 03:32*	WG1503196
(S) 4-Bromofluorobenzene	*106*			*77.0-126*		*07/01/2020 01:53*	WG1501977
(S) 4-Bromofluorobenzene	*99.1*			*77.0-126*		*07/03/2020 03:32*	WG1503196
(S) 1,2-Dichloroethane-d4	*80.3*			*70.0-130*		*07/01/2020 01:53*	WG1501977
(S) 1,2-Dichloroethane-d4	*108*			*70.0-130*		*07/03/2020 03:32*	WG1503196

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	634	B	31.6	100	1	07/03/2020 22:49	WG1503762
(S) a,a,a-Trifluorotoluene(FID)	*98.6*			*78.0-120*		*07/03/2020 22:49*	WG1503762

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0941	1.00	1	07/01/2020 02:13	WG1501977
Ethylbenzene	13.9		0.137	1.00	1	07/02/2020 23:55	WG1503196
Toluene	0.643	J	0.278	1.00	1	07/01/2020 02:13	WG1501977
Xylenes, Total	2.99	J	0.174	3.00	1	07/02/2020 23:55	WG1503196
Methyl tert-butyl ether	2.47		0.101	1.00	1	07/01/2020 02:13	WG1501977
Naphthalene	3.10	J	1.00	5.00	1	07/01/2020 02:13	WG1501977
1,2-Dibromoethane	U		0.126	1.00	1	07/01/2020 02:13	WG1501977
1,2-Dichloroethane	0.0930	J	0.0819	1.00	1	07/01/2020 02:13	WG1501977
Isopropylbenzene	21.3		0.105	1.00	1	07/01/2020 02:13	WG1501977
n-Propylbenzene	25.9		0.0993	1.00	1	07/01/2020 02:13	WG1501977
1,2,4-Trimethylbenzene	0.742	J	0.322	1.00	1	07/01/2020 02:13	WG1501977
1,3,5-Trimethylbenzene	1.67		0.104	1.00	1	07/01/2020 02:13	WG1501977
(S) Toluene-d8	*97.8*			*80.0-120*		*07/01/2020 02:13*	WG1501977
(S) Toluene-d8	*107*			*80.0-120*		*07/02/2020 23:55*	WG1503196
(S) 4-Bromofluorobenzene	*107*			*77.0-126*		*07/01/2020 02:13*	WG1501977
(S) 4-Bromofluorobenzene	*97.2*			*77.0-126*		*07/02/2020 23:55*	WG1503196
(S) 1,2-Dichloroethane-d4	*85.6*			*70.0-130*		*07/01/2020 02:13*	WG1501977
(S) 1,2-Dichloroethane-d4	*115*			*70.0-130*		*07/02/2020 23:55*	WG1503196

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	17000		316	1000	10	07/07/2020 19:59	WG1505160
(S) a,a,a-Trifluorotoluene(FID)	*93.9*			*78.0-120*		*07/07/2020 19:59*	WG1505160

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	1060		1.88	20.0	20	07/03/2020 03:52	WG1503196
Ethylbenzene	1190		2.74	20.0	20	07/03/2020 03:52	WG1503196
Toluene	138		5.56	20.0	20	07/03/2020 03:52	WG1503196
Xylenes, Total	3420		3.48	60.0	20	07/03/2020 03:52	WG1503196
Methyl tert-butyl ether	2.66	J	2.02	20.0	20	07/03/2020 03:52	WG1503196
Naphthalene	247		20.0	100	20	07/03/2020 03:52	WG1503196
1,2-Dibromoethane	U		2.52	20.0	20	07/03/2020 03:52	WG1503196
1,2-Dichloroethane	U		1.64	20.0	20	07/03/2020 03:52	WG1503196
Isopropylbenzene	44.3		2.10	20.0	20	07/03/2020 03:52	WG1503196
n-Propylbenzene	102		1.99	20.0	20	07/03/2020 03:52	WG1503196
1,2,4-Trimethylbenzene	660		6.44	20.0	20	07/03/2020 03:52	WG1503196
1,3,5-Trimethylbenzene	179		2.08	20.0	20	07/03/2020 03:52	WG1503196
(S) Toluene-d8	*109*			*80.0-120*		*07/03/2020 03:52*	WG1503196
(S) 4-Bromofluorobenzene	*98.9*			*77.0-126*		*07/03/2020 03:52*	WG1503196
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*		*07/03/2020 03:52*	WG1503196

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	3150		31.6	100	1	07/03/2020 23:33	WG1503762
(S) a,a,a-Trifluorotoluene(FID)	*105*			*78.0-120*		*07/03/2020 23:33*	WG1503762

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	38.3		0.0941	1.00	1	07/03/2020 00:15	WG1503196
Ethylbenzene	90.6		0.137	1.00	1	07/03/2020 00:15	WG1503196
Toluene	7.79		0.278	1.00	1	07/03/2020 00:15	WG1503196
Xylenes, Total	13.0		0.174	3.00	1	07/03/2020 00:15	WG1503196
Methyl tert-butyl ether	U		0.101	1.00	1	07/03/2020 00:15	WG1503196
Naphthalene	29.2		1.00	5.00	1	07/07/2020 15:34	WG1505031
1,2-Dibromoethane	U		0.126	1.00	1	07/03/2020 00:15	WG1503196
1,2-Dichloroethane	U		0.0819	1.00	1	07/03/2020 00:15	WG1503196
Isopropylbenzene	31.6		0.105	1.00	1	07/03/2020 00:15	WG1503196
n-Propylbenzene	76.4		0.0993	1.00	1	07/03/2020 00:15	WG1503196
1,2,4-Trimethylbenzene	5.86		0.322	1.00	1	07/03/2020 00:15	WG1503196
1,3,5-Trimethylbenzene	3.37		0.104	1.00	1	07/03/2020 00:15	WG1503196
(S) Toluene-d8	*95.5*			*80.0-120*		*07/03/2020 00:15*	WG1503196
(S) Toluene-d8	*94.5*			*80.0-120*		*07/07/2020 15:34*	WG1505031
(S) 4-Bromofluorobenzene	*89.9*			*77.0-126*		*07/03/2020 00:15*	WG1503196
(S) 4-Bromofluorobenzene	*94.4*			*77.0-126*		*07/07/2020 15:34*	WG1505031
(S) 1,2-Dichloroethane-d4	*124*			*70.0-130*		*07/03/2020 00:15*	WG1503196
(S) 1,2-Dichloroethane-d4	*130*			*70.0-130*		*07/07/2020 15:34*	WG1505031

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	7610		31.6	100	1	07/03/2020 23:55	WG1503762
(S) a,a,a-Trifluorotoluene(FID)	*110*			*78.0-120*		*07/03/2020 23:55*	WG1503762

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	556		0.471	5.00	5	07/03/2020 04:12	WG1503196
Ethylbenzene	586		0.685	5.00	5	07/03/2020 04:12	WG1503196
Toluene	15.4		1.39	5.00	5	07/03/2020 04:12	WG1503196
Xylenes, Total	207		0.870	15.0	5	07/03/2020 04:12	WG1503196
Methyl tert-butyl ether	15.2		0.505	5.00	5	07/03/2020 04:12	WG1503196
Naphthalene	355		5.00	25.0	5	07/07/2020 16:12	WG1505031
1,2-Dibromoethane	U		0.630	5.00	5	07/03/2020 04:12	WG1503196
1,2-Dichloroethane	U		0.409	5.00	5	07/03/2020 04:12	WG1503196
Isopropylbenzene	102		0.525	5.00	5	07/03/2020 04:12	WG1503196
n-Propylbenzene	217		0.497	5.00	5	07/03/2020 04:12	WG1503196
1,2,4-Trimethylbenzene	11.6		1.61	5.00	5	07/03/2020 04:12	WG1503196
1,3,5-Trimethylbenzene	96.8		0.520	5.00	5	07/03/2020 04:12	WG1503196
(S) Toluene-d8	*105*			*80.0-120*		*07/03/2020 04:12*	WG1503196
(S) Toluene-d8	*102*			*80.0-120*		*07/07/2020 16:12*	WG1505031
(S) 4-Bromofluorobenzene	*98.8*			*77.0-126*		*07/03/2020 04:12*	WG1503196
(S) 4-Bromofluorobenzene	*98.4*			*77.0-126*		*07/07/2020 16:12*	WG1505031
(S) 1,2-Dichloroethane-d4	*110*			*70.0-130*		*07/03/2020 04:12*	WG1503196
(S) 1,2-Dichloroethane-d4	*114*			*70.0-130*		*07/07/2020 16:12*	WG1505031

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	2840		31.6	100	1	07/04/2020 04:44	WG1503762
(S) a,a,a-Trifluorotoluene(FID)	*87.5*			*78.0-120*		*07/04/2020 04:44*	WG1503762

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	2330		2.35	25.0	25	07/03/2020 04:32	WG1503196
Ethylbenzene	1900		3.43	25.0	25	07/03/2020 04:32	WG1503196
Toluene	91.4		6.95	25.0	25	07/03/2020 04:32	WG1503196
Xylenes, Total	5020		4.35	75.0	25	07/03/2020 04:32	WG1503196
Methyl tert-butyl ether	6.24	J	2.53	25.0	25	07/03/2020 04:32	WG1503196
Naphthalene	381		25.0	125	25	07/03/2020 04:32	WG1503196
1,2-Dibromoethane	U		3.15	25.0	25	07/03/2020 04:32	WG1503196
1,2-Dichloroethane	U		2.05	25.0	25	07/03/2020 04:32	WG1503196
Isopropylbenzene	131		2.63	25.0	25	07/03/2020 04:32	WG1503196
n-Propylbenzene	297		2.48	25.0	25	07/03/2020 04:32	WG1503196
1,2,4-Trimethylbenzene	1310		8.05	25.0	25	07/03/2020 04:32	WG1503196
1,3,5-Trimethylbenzene	441		2.60	25.0	25	07/03/2020 04:32	WG1503196
(S) Toluene-d8	*108*			*80.0-120*		*07/03/2020 04:32*	WG1503196
(S) 4-Bromofluorobenzene	*103*			*77.0-126*		*07/03/2020 04:32*	WG1503196
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*		*07/03/2020 04:32*	WG1503196

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	72200		316	1000	10	07/04/2020 00:17	WG1503762
(S) a,a,a-Trifluorotoluene(FID)	*108*			*78.0-120*		*07/04/2020 00:17*	WG1503762

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	681		0.471	5.00	5	07/03/2020 04:52	WG1503196
Ethylbenzene	459		0.685	5.00	5	07/03/2020 04:52	WG1503196
Toluene	37.5		1.39	5.00	5	07/03/2020 04:52	WG1503196
Xylenes, Total	582		0.870	15.0	5	07/03/2020 04:52	WG1503196
Methyl tert-butyl ether	16.8		0.505	5.00	5	07/03/2020 04:52	WG1503196
Naphthalene	102		5.00	25.0	5	07/03/2020 04:52	WG1503196
1,2-Dibromoethane	U		0.630	5.00	5	07/03/2020 04:52	WG1503196
1,2-Dichloroethane	U		0.409	5.00	5	07/03/2020 04:52	WG1503196
Isopropylbenzene	78.8		0.525	5.00	5	07/03/2020 04:52	WG1503196
n-Propylbenzene	171		0.497	5.00	5	07/03/2020 04:52	WG1503196
1,2,4-Trimethylbenzene	258		1.61	5.00	5	07/03/2020 04:52	WG1503196
1,3,5-Trimethylbenzene	94.5		0.520	5.00	5	07/03/2020 04:52	WG1503196
(S) Toluene-d8	*109*			*80.0-120*		*07/03/2020 04:52*	WG1503196
(S) 4-Bromofluorobenzene	*100*			*77.0-126*		*07/03/2020 04:52*	WG1503196
(S) 1,2-Dichloroethane-d4	*108*			*70.0-130*		*07/03/2020 04:52*	WG1503196

Method Blank (MB)

(MB) R3546746-2 07/03/20 23:18

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	46.4	J	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	*112*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3546746-1 07/03/20 22:07

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5780	105	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*95.1*	*78.0-120*	

Method Blank (MB)

(MB) R3546939-2 07/03/20 20:08

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	80.2	J	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	*94.9*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3546939-1 07/03/20 19:23

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5240	95.3	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*100*	*78.0-120*	

L1234408-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1234408-14 07/04/20 04:22 • (MS) R3546939-3 07/04/20 05:51 • (MSD) R3546939-4 07/04/20 06:13

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	5500	75.1	3720	3530	66.3	62.8	1	10.0-155			5.24	21
(S) a,a,a-Trifluorotoluene(FID)					*95.6*	*94.5*		*78.0-120*				

Method Blank (MB)

(MB) R3546949-2 07/07/20 10:59

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	65.8	J	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	*95.7*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3546949-1 07/07/20 10:02

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5060	92.0	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*101*	*78.0-120*	

Method Blank (MB)

(MB) R3547059-2 07/07/20 10:59

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	65.8	J	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	*95.7*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3547059-1 07/07/20 10:02

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5060	92.0	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*101*	*78.0-120*	

Method Blank (MB)

(MB) R3545591-2 06/30/20 19:54

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzene	U		0.0941	1.00
1,2-Dibromoethane	U		0.126	1.00
1,2-Dichloroethane	U		0.0819	1.00
Isopropylbenzene	U		0.105	1.00
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.0993	1.00
Toluene	U		0.278	1.00
1,2,4-Trimethylbenzene	U		0.322	1.00
1,3,5-Trimethylbenzene	U		0.104	1.00
(S) Toluene-d8	*101*			*80.0-120*
(S) 4-Bromofluorobenzene	*108*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*88.5*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3545591-1 06/30/20 19:16

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	5.00	4.33	86.6	70.0-123	
1,2-Dibromoethane	5.00	5.36	107	80.0-122	
1,2-Dichloroethane	5.00	3.53	70.6	70.0-128	
Isopropylbenzene	5.00	5.93	119	76.0-127	
Methyl tert-butyl ether	5.00	4.76	95.2	68.0-125	
Naphthalene	5.00	5.22	104	54.0-135	
n-Propylbenzene	5.00	4.34	86.8	77.0-124	
Toluene	5.00	4.39	87.8	79.0-120	
1,2,4-Trimethylbenzene	5.00	4.01	80.2	76.0-121	
1,3,5-Trimethylbenzene	5.00	5.05	101	76.0-122	
(S) Toluene-d8			*100*	*80.0-120*	
(S) 4-Bromofluorobenzene			*106*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*87.8*	*70.0-130*	

Method Blank (MB)

(MB) R3546845-2 07/02/20 23:16

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzene	U		0.0941	1.00
1,2-Dibromoethane	U		0.126	1.00
1,2-Dichloroethane	U		0.0819	1.00
Ethylbenzene	U		0.137	1.00
Isopropylbenzene	U		0.105	1.00
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.0993	1.00
Toluene	U		0.278	1.00
1,2,4-Trimethylbenzene	U		0.322	1.00
1,3,5-Trimethylbenzene	U		0.104	1.00
Xylenes, Total	U		0.174	3.00
(S) Toluene-d8	*108*			*80.0-120*
(S) 4-Bromofluorobenzene	*96.2*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*114*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3546845-1 07/02/20 22:36

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	5.00	5.56	111	70.0-123	
1,2-Dibromoethane	5.00	5.64	113	80.0-122	
1,2-Dichloroethane	5.00	5.62	112	70.0-128	
Ethylbenzene	5.00	5.76	115	79.0-123	
Isopropylbenzene	5.00	6.04	121	76.0-127	
Methyl tert-butyl ether	5.00	4.93	98.6	68.0-125	
Naphthalene	5.00	4.49	89.8	54.0-135	
n-Propylbenzene	5.00	4.74	94.8	77.0-124	
Toluene	5.00	5.79	116	79.0-120	
1,2,4-Trimethylbenzene	5.00	4.33	86.6	76.0-121	
1,3,5-Trimethylbenzene	5.00	4.60	92.0	76.0-122	
Xylenes, Total	15.0	16.8	112	79.0-123	
(S) Toluene-d8			*109*	*80.0-120*	
(S) 4-Bromofluorobenzene			*101*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*115*	*70.0-130*	

Method Blank (MB)

(MB) R3546990-2 07/07/20 08:03

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Naphthalene	U		1.00	5.00
(S) Toluene-d8	*104*			*80.0-120*
(S) 4-Bromofluorobenzene	*98.4*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*118*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3546990-1 07/07/20 06:53

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Naphthalene	5.00	5.63	113	54.0-135	
(S) Toluene-d8			*104*	*80.0-120*	
(S) 4-Bromofluorobenzene			*99.8*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*119*	*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

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
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
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.

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

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	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

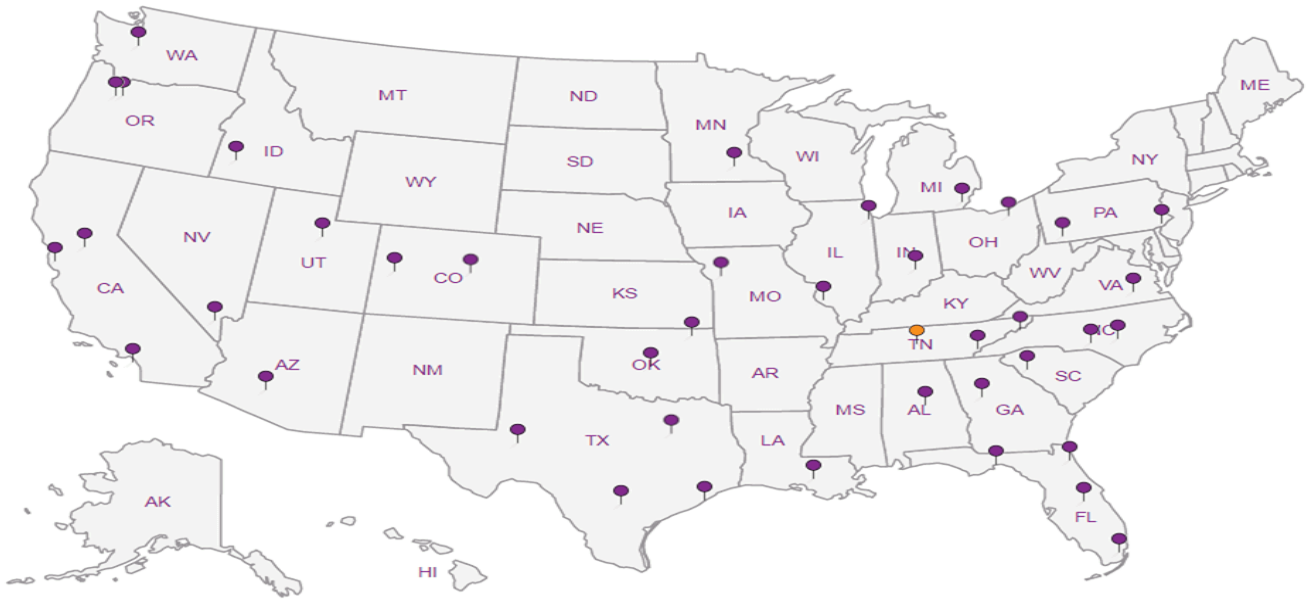
Third Party Federal Accreditations

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.



GeoDesign Inc. - Wilsonville, OR

9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Billing Information:
Accounts Payable
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Pres Chk

Report to: Kyle Haggart

Email To: khaggart@geodesigninc.com;thainley@geodesi...

Project Description: Former Astoria Warehousing

City/State Collected: Astoria, OR

Please Circle: PT MT CT ET

Phone: 503-968-8787

Client Project # BigBeams-1-04

Lab Project # GEODESPOR-BIGB104

Collected by (print): Tim Hainley

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Site/Facility ID #

P.O. #

Quote #

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

Date Results Needed

No. of Cntrs

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	FF Diss RCRA8 6020 250mlHDPE HNO3	NWTPHDX NOSGT 100ml Amb-HCl	NWTPHGX 40mlAmb HCl	PAHs 8270E-SIM 40mlAmb-NoPres-WT	Total RCRA8 6020 250mlHDPE-HNO3	VOCs 8260D 40mlAmb-HCl RBDM				Remarks	Sample # (lab only)
MW-1(062520)		GW		6/25/20	835	6			X			X					-01
MW-2(062520)		GW			910	6			X			X					-02
MW-3(062520)		GW			757	6			X			X					-03
MW-4(062520)		GW			1025	6			X			X					-04
MW-5(062520)		GW			1125	6			X			X					-05
MW-6(062520)		GW			1320	6			X			X					-06
MW-7(062520		GW			1425	6			X			X					-06
MW-8(062520)		GW			1250	6			X			X					-07
		GW															
		GW															

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

SDG # 1234402

J118

Acctnum: GEODESPOR

Template: T169767

Prelogin: P781401

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:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 1845 4324 3540

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		X N
Bottles arrive intact:		X N
Correct bottles used:		X N
Sufficient volume sent:		X N
If Applicable		
VOA Zero Headspace:		X N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		X N

	Date:	Time:		
Relinquished by: (Signature)	6/26/20	1215	Received by: (Signature)	Trip Blank Received: Yes / No HCl / MeoH TBR: 2
Relinquished by: (Signature) BNSON	6/26/20	1400	Received by: (Signature)	Temp: 1.5-4=1.1 °C Bottles Received: 48
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 6/27/20 Time: 0845

If preservation required by Login: Date/Time

Hold: Condition: NCF / OK

Matt Shacklock

Login #: L1234402	Client: GEODESPOR	Date: 06/27/20	Evaluated by:

Non-Conformance (check applicable items)

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

Login Comments:

Received 6 vials labeled as MW-7 with a time of 1325, but we are missing MW-6 with a time of 1320. Please clarify.

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

Login Instructions:

Log containers for MW-7 with a time of 1325 as MW-6 with a time of 1320

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1/5/2021
Mr. Kyle Haggart
GeoDesign, Inc.
9450 SW Commerce Circle
Suite 300
Wilsonville OR 97070

Project Name: BigBeams-1-04
Project #:
Workorder #: 2012660

Dear Mr. Kyle Haggart

The following report includes the data for the above referenced project for sample(s) received on 12/28/2020 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Alexandra Winslow at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Alexandra Winslow

Project Manager

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WORK ORDER #: 2012660

Work Order Summary

CLIENT:	Mr. Kyle Haggart GeoDesign, Inc. 9450 SW Commerce Circle Suite 300 Wilsonville, OR 97070	**BILL TO:**	Mr. Kyle Haggart GeoDesign, Inc. 9450 SW Commerce Circle Suite 300 Wilsonville, OR 97070
PHONE:	5035778288	**P.O. #**	
FAX:		**PROJECT #**	BigBeams-1-04
DATE RECEIVED:	12/28/2020	**CONTACT:**	Alexandra Winslow
DATE COMPLETED:	01/05/2021		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VP-1(121720)	TO-15	5.3 "Hg	15 psi
02A	VP-2(121720)	TO-15	4.1 "Hg	14.9 psi
03A	VP-3(121720)	TO-15	6.7 "Hg	14.9 psi
04A	VP-4(121720)	TO-15	6.7 "Hg	14.9 psi
05A	Lab Blank	TO-15	NA	NA
05B	Lab Blank	TO-15	NA	NA
06A	CCV	TO-15	NA	NA
06B	CCV	TO-15	NA	NA
07A	LCS	TO-15	NA	NA
07AA	LCSD	TO-15	NA	NA
07B	LCS	TO-15	NA	NA
07BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 01/05/21

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
GeoDesign, Inc.
Workorder# 2012660

Four 1 Liter Summa Canister samples were received on December 28, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

The Chain of Custody (COC) information for sample VP-3(121720) and VP-4(121720) did not match the information on the canister with regard to canister barcode. The sample labeled 1L2530 and 1L2911 on the COC is labeled as 1L2911 and 1L28530 on the canister. The client was notified of the discrepancy and the information on the canister was used to process and report the samples.

Analytical Notes

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in CCV analyses have not been flagged.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

Dilution was performed on samples VP-3(121720) and VP-4(121720) due to the presence of high level target species.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP-1(121720)

Lab ID#: 2012660-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	12	120	29	280
2-Propanol	4.9	23	12	56

Client Sample ID: VP-2(121720)

Lab ID#: 2012660-02A

No Detections Were Found.

Client Sample ID: VP-3(121720)

Lab ID#: 2012660-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	650	470000	2300	1700000
Cyclohexane	650	200000	2200	680000
2,2,4-Trimethylpentane	650	270000	3000	1300000
Benzene	650	150000	2100	470000
Heptane	650	190000	2700	770000
Toluene	650	720	2400	2700
Ethyl Benzene	650	49000	2800	210000
m,p-Xylene	650	56000	2800	240000
o-Xylene	650	1000	2800	4400
Cumene	650	1200	3200	5900
Propylbenzene	650	2200	3200	11000
4-Ethyltoluene	650	5000	3200	24000
1,3,5-Trimethylbenzene	650	5100	3200	25000
1,2,4-Trimethylbenzene	650	12000	3200	62000
TPH ref. to Gasoline (MW=100)	26000	14000000	110000	57000000

Client Sample ID: VP-4(121720)

Lab ID#: 2012660-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	260	14000	920	51000

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS

Client Sample ID: VP-4(121720)

Lab ID#: 2012660-04A

Cyclohexane	260	14000	890	47000
2,2,4-Trimethylpentane	260	72000	1200	340000
Heptane	260	4500	1100	19000
TPH ref. to Gasoline (MW=100)	10000	1500000	42000	6100000

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Client Sample ID: VP-1(121720)

Lab ID#: 2012660-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j123027**	**Date of Collection:**	**12/17/20 8:22:00 AM**
Dil. Factor:	**2.45**	**Date of Analysis:**	**12/31/20 12:28 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	Not Detected	6.0	Not Detected
Freon 114	1.2	Not Detected	8.6	Not Detected
Chloromethane	12	Not Detected	25	Not Detected
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,3-Butadiene	1.2	Not Detected	2.7	Not Detected
Bromomethane	12	Not Detected	48	Not Detected
Chloroethane	4.9	Not Detected	13	Not Detected
Freon 11	1.2	Not Detected	6.9	Not Detected
Ethanol	12	Not Detected	23	Not Detected
Freon 113	1.2	Not Detected	9.4	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Acetone	12	120	29	280
2-Propanol	4.9	23	12	56
Carbon Disulfide	4.9	Not Detected	15	Not Detected
3-Chloropropene	4.9	Not Detected	15	Not Detected
Methylene Chloride	12	Not Detected	42	Not Detected
Methyl tert-butyl ether	4.9	Not Detected	18	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Hexane	1.2	Not Detected	4.3	Not Detected
1,1-Dichloroethane	1.2	Not Detected	5.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.9	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.6	Not Detected
Chloroform	1.2	Not Detected	6.0	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.7	Not Detected
Cyclohexane	1.2	Not Detected	4.2	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.7	Not Detected
2,2,4-Trimethylpentane	1.2	Not Detected	5.7	Not Detected
Benzene	1.2	Not Detected	3.9	Not Detected
1,2-Dichloroethane	1.2	Not Detected	5.0	Not Detected
Heptane	1.2	Not Detected	5.0	Not Detected
Trichloroethene	1.2	Not Detected	6.6	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.7	Not Detected
1,4-Dioxane	4.9	Not Detected	18	Not Detected
Bromodichloromethane	1.2	Not Detected	8.2	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.6	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	5.0	Not Detected
Toluene	1.2	Not Detected	4.6	Not Detected
trans-1,3-Dichloropropene	1.2	Not Detected	5.6	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.7	Not Detected
Tetrachloroethene	1.2	Not Detected	8.3	Not Detected
2-Hexanone	4.9	Not Detected	20	Not Detected

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Client Sample ID: VP-1(121720)

Lab ID#: 2012660-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j123027**	**Date of Collection:**	**12/17/20 8:22:00 AM**
Dil. Factor:	**2.45**	**Date of Analysis:**	**12/31/20 12:28 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.4	Not Detected
Chlorobenzene	1.2	Not Detected	5.6	Not Detected
Ethyl Benzene	1.2	Not Detected	5.3	Not Detected
m,p-Xylene	1.2	Not Detected	5.3	Not Detected
o-Xylene	1.2	Not Detected	5.3	Not Detected
Styrene	1.2	Not Detected	5.2	Not Detected
Bromoform	1.2	Not Detected	13	Not Detected
Cumene	1.2	Not Detected	6.0	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.4	Not Detected
Propylbenzene	1.2	Not Detected	6.0	Not Detected
4-Ethyltoluene	1.2	Not Detected	6.0	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	6.0	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	6.0	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.3	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,2,4-Trichlorobenzene	4.9	Not Detected	36	Not Detected
Hexachlorobutadiene	4.9	Not Detected	52	Not Detected
TPH ref. to Gasoline (MW=100)	120	Not Detected	500	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: VP-2(121720)

Lab ID#: 2012660-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j123028**	**Date of Collection:**	**12/17/20 8:38:00 AM**
Dil. Factor:	**2.33**	**Date of Analysis:**	**12/31/20 12:57 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	Not Detected	5.8	Not Detected
Freon 114	1.2	Not Detected	8.1	Not Detected
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,3-Butadiene	1.2	Not Detected	2.6	Not Detected
Bromomethane	12	Not Detected	45	Not Detected
Chloroethane	4.7	Not Detected	12	Not Detected
Freon 11	1.2	Not Detected	6.5	Not Detected
Ethanol	12	Not Detected	22	Not Detected
Freon 113	1.2	Not Detected	8.9	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Acetone	12	Not Detected	28	Not Detected
2-Propanol	4.7	Not Detected	11	Not Detected
Carbon Disulfide	4.7	Not Detected	14	Not Detected
3-Chloropropene	4.7	Not Detected	14	Not Detected
Methylene Chloride	12	Not Detected	40	Not Detected
Methyl tert-butyl ether	4.7	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Hexane	1.2	Not Detected	4.1	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.7	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.4	Not Detected
Chloroform	1.2	Not Detected	5.7	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Cyclohexane	1.2	Not Detected	4.0	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.3	Not Detected
2,2,4-Trimethylpentane	1.2	Not Detected	5.4	Not Detected
Benzene	1.2	Not Detected	3.7	Not Detected
1,2-Dichloroethane	1.2	Not Detected	4.7	Not Detected
Heptane	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	Not Detected	6.3	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.4	Not Detected
1,4-Dioxane	4.7	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	7.8	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.3	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	4.8	Not Detected
Toluene	1.2	Not Detected	4.4	Not Detected
trans-1,3-Dichloropropene	1.2	Not Detected	5.3	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Tetrachloroethene	1.2	Not Detected	7.9	Not Detected
2-Hexanone	4.7	Not Detected	19	Not Detected

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Client Sample ID: VP-2(121720)

Lab ID#: 2012660-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j123028**	**Date of Collection:**	**12/17/20 8:38:00 AM**
Dil. Factor:	**2.33**	**Date of Analysis:**	**12/31/20 12:57 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	9.9	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.0	Not Detected
Chlorobenzene	1.2	Not Detected	5.4	Not Detected
Ethyl Benzene	1.2	Not Detected	5.0	Not Detected
m,p-Xylene	1.2	Not Detected	5.0	Not Detected
o-Xylene	1.2	Not Detected	5.0	Not Detected
Styrene	1.2	Not Detected	5.0	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	5.7	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.0	Not Detected
Propylbenzene	1.2	Not Detected	5.7	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.7	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.7	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.7	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.0	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
1,2,4-Trichlorobenzene	4.7	Not Detected	34	Not Detected
Hexachlorobutadiene	4.7	Not Detected	50	Not Detected
TPH ref. to Gasoline (MW=100)	120	Not Detected	480	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: VP-3(121720)

Lab ID#: 2012660-03A

EPA METHOD TO-15 GC/MS

File Name:	**14123122**	**Date of Collection:**	**12/17/20 9:06:00 AM**
Dil. Factor:	**130**	**Date of Analysis:**	**12/31/20 06:15 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	650	Not Detected	3200	Not Detected
Freon 114	650	Not Detected	4500	Not Detected
Chloromethane	2600	Not Detected	5400	Not Detected
Vinyl Chloride	650	Not Detected	1700	Not Detected
1,3-Butadiene	650	Not Detected	1400	Not Detected
Bromomethane	2600	Not Detected	10000	Not Detected
Chloroethane	2600	Not Detected	6900	Not Detected
Freon 11	650	Not Detected	3600	Not Detected
Ethanol	2600	Not Detected	4900	Not Detected
Freon 113	650	Not Detected	5000	Not Detected
1,1-Dichloroethene	650	Not Detected	2600	Not Detected
Acetone	2600	Not Detected	6200	Not Detected
2-Propanol	2600	Not Detected	6400	Not Detected
Carbon Disulfide	2600	Not Detected	8100	Not Detected
3-Chloropropene	2600	Not Detected	8100	Not Detected
Methylene Chloride	2600	Not Detected	9000	Not Detected
Methyl tert-butyl ether	650	Not Detected UJ	2300	Not Detected UJ
trans-1,2-Dichloroethene	650	Not Detected	2600	Not Detected
Hexane	650	470000	2300	1700000
1,1-Dichloroethane	650	Not Detected	2600	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2600	Not Detected	7700	Not Detected
cis-1,2-Dichloroethene	650	Not Detected	2600	Not Detected
Tetrahydrofuran	650	Not Detected	1900	Not Detected
Chloroform	650	Not Detected	3200	Not Detected
1,1,1-Trichloroethane	650	Not Detected	3500	Not Detected
Cyclohexane	650	200000	2200	680000
Carbon Tetrachloride	650	Not Detected	4100	Not Detected
2,2,4-Trimethylpentane	650	270000	3000	1300000
Benzene	650	150000	2100	470000
1,2-Dichloroethane	650	Not Detected	2600	Not Detected
Heptane	650	190000	2700	770000
Trichloroethene	650	Not Detected	3500	Not Detected
1,2-Dichloropropane	650	Not Detected	3000	Not Detected
1,4-Dioxane	2600	Not Detected	9400	Not Detected
Bromodichloromethane	650	Not Detected	4400	Not Detected
cis-1,3-Dichloropropene	650	Not Detected	3000	Not Detected
4-Methyl-2-pentanone	650	Not Detected	2700	Not Detected
Toluene	650	720	2400	2700
trans-1,3-Dichloropropene	650	Not Detected	3000	Not Detected
1,1,2-Trichloroethane	650	Not Detected	3500	Not Detected
Tetrachloroethene	650	Not Detected	4400	Not Detected
2-Hexanone	2600	Not Detected	11000	Not Detected

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Client Sample ID: VP-3(121720)

Lab ID#: 2012660-03A

EPA METHOD TO-15 GC/MS

File Name:	**14123122**	**Date of Collection: 12/17/20 9:06:00 AM**	
Dil. Factor:	**130**	**Date of Analysis: 12/31/20 06:15 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	650	Not Detected	5500	Not Detected
1,2-Dibromoethane (EDB)	650	Not Detected	5000	Not Detected
Chlorobenzene	650	Not Detected	3000	Not Detected
Ethyl Benzene	650	49000	2800	210000
m,p-Xylene	650	56000	2800	240000
o-Xylene	650	1000	2800	4400
Styrene	650	Not Detected	2800	Not Detected
Bromoform	650	Not Detected	6700	Not Detected
Cumene	650	1200	3200	5900
1,1,2,2-Tetrachloroethane	650	Not Detected	4500	Not Detected
Propylbenzene	650	2200	3200	11000
4-Ethyltoluene	650	5000	3200	24000
1,3,5-Trimethylbenzene	650	5100	3200	25000
1,2,4-Trimethylbenzene	650	12000	3200	62000
1,3-Dichlorobenzene	650	Not Detected	3900	Not Detected
1,4-Dichlorobenzene	650	Not Detected	3900	Not Detected
alpha-Chlorotoluene	650	Not Detected	3400	Not Detected
1,2-Dichlorobenzene	650	Not Detected	3900	Not Detected
1,2,4-Trichlorobenzene	2600	Not Detected	19000	Not Detected
Hexachlorobutadiene	2600	Not Detected	28000	Not Detected
TPH ref. to Gasoline (MW=100)	26000	14000000	110000	57000000

UJ = Analyte associated with low bias in the CCV.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: VP-4(121720)

Lab ID#: 2012660-04A

EPA METHOD TO-15 GC/MS

File Name:	**14123121**	**Date of Collection:**	**12/17/20 8:54:00 AM**
Dil. Factor:	**52.0**	**Date of Analysis:**	**12/31/20 05:47 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	260	Not Detected	1300	Not Detected
Freon 114	260	Not Detected	1800	Not Detected
Chloromethane	1000	Not Detected	2100	Not Detected
Vinyl Chloride	260	Not Detected	660	Not Detected
1,3-Butadiene	260	Not Detected	580	Not Detected
Bromomethane	1000	Not Detected	4000	Not Detected
Chloroethane	1000	Not Detected	2700	Not Detected
Freon 11	260	Not Detected	1500	Not Detected
Ethanol	1000	Not Detected	2000	Not Detected
Freon 113	260	Not Detected	2000	Not Detected
1,1-Dichloroethene	260	Not Detected	1000	Not Detected
Acetone	1000	Not Detected	2500	Not Detected
2-Propanol	1000	Not Detected	2600	Not Detected
Carbon Disulfide	1000	Not Detected	3200	Not Detected
3-Chloropropene	1000	Not Detected	3200	Not Detected
Methylene Chloride	1000	Not Detected	3600	Not Detected
Methyl tert-butyl ether	260	Not Detected UJ	940	Not Detected UJ
trans-1,2-Dichloroethene	260	Not Detected	1000	Not Detected
Hexane	260	14000	920	51000
1,1-Dichloroethane	260	Not Detected	1000	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1000	Not Detected	3100	Not Detected
cis-1,2-Dichloroethene	260	Not Detected	1000	Not Detected
Tetrahydrofuran	260	Not Detected	770	Not Detected
Chloroform	260	Not Detected	1300	Not Detected
1,1,1-Trichloroethane	260	Not Detected	1400	Not Detected
Cyclohexane	260	14000	890	47000
Carbon Tetrachloride	260	Not Detected	1600	Not Detected
2,2,4-Trimethylpentane	260	72000	1200	340000
Benzene	260	Not Detected	830	Not Detected
1,2-Dichloroethane	260	Not Detected	1000	Not Detected
Heptane	260	4500	1100	19000
Trichloroethene	260	Not Detected	1400	Not Detected
1,2-Dichloropropane	260	Not Detected	1200	Not Detected
1,4-Dioxane	1000	Not Detected	3700	Not Detected
Bromodichloromethane	260	Not Detected	1700	Not Detected
cis-1,3-Dichloropropene	260	Not Detected	1200	Not Detected
4-Methyl-2-pentanone	260	Not Detected	1100	Not Detected
Toluene	260	Not Detected	980	Not Detected
trans-1,3-Dichloropropene	260	Not Detected	1200	Not Detected
1,1,2-Trichloroethane	260	Not Detected	1400	Not Detected
Tetrachloroethene	260	Not Detected	1800	Not Detected
2-Hexanone	1000	Not Detected	4300	Not Detected

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Client Sample ID: VP-4(121720)

Lab ID#: 2012660-04A

EPA METHOD TO-15 GC/MS

File Name:	**14123121**	**Date of Collection: 12/17/20 8:54:00 AM**	
Dil. Factor:	**52.0**	**Date of Analysis: 12/31/20 05:47 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	260	Not Detected	2200	Not Detected
1,2-Dibromoethane (EDB)	260	Not Detected	2000	Not Detected
Chlorobenzene	260	Not Detected	1200	Not Detected
Ethyl Benzene	260	Not Detected	1100	Not Detected
m,p-Xylene	260	Not Detected	1100	Not Detected
o-Xylene	260	Not Detected	1100	Not Detected
Styrene	260	Not Detected	1100	Not Detected
Bromoform	260	Not Detected	2700	Not Detected
Cumene	260	Not Detected	1300	Not Detected
1,1,2,2-Tetrachloroethane	260	Not Detected	1800	Not Detected
Propylbenzene	260	Not Detected	1300	Not Detected
4-Ethyltoluene	260	Not Detected	1300	Not Detected
1,3,5-Trimethylbenzene	260	Not Detected	1300	Not Detected
1,2,4-Trimethylbenzene	260	Not Detected	1300	Not Detected
1,3-Dichlorobenzene	260	Not Detected	1600	Not Detected
1,4-Dichlorobenzene	260	Not Detected	1600	Not Detected
alpha-Chlorotoluene	260	Not Detected	1300	Not Detected
1,2-Dichlorobenzene	260	Not Detected	1600	Not Detected
1,2,4-Trichlorobenzene	1000	Not Detected	7700	Not Detected
Hexachlorobutadiene	1000	Not Detected	11000	Not Detected
TPH ref. to Gasoline (MW=100)	10000	1500000	42000	6100000

UJ = Analyte associated with low bias in the CCV.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	82	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2012660-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j123008**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/30/20 12:40 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	5.0	Not Detected	9.4	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	2.0	Not Detected	7.2	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2012660-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j123008**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/30/20 12:40 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
TPH ref. to Gasoline (MW=100)	50	Not Detected	200	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2012660-05B

EPA METHOD TO-15 GC/MS

File Name:	**14123107**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/31/20 10:25 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	20	Not Detected	78	Not Detected
Chloroethane	20	Not Detected	53	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Ethanol	20	Not Detected	38	Not Detected
Freon 113	5.0	Not Detected	38	Not Detected
1,1-Dichloroethene	5.0	Not Detected	20	Not Detected
Acetone	20	Not Detected	48	Not Detected
2-Propanol	20	Not Detected	49	Not Detected
Carbon Disulfide	20	Not Detected	62	Not Detected
3-Chloropropene	20	Not Detected	63	Not Detected
Methylene Chloride	20	Not Detected	69	Not Detected
Methyl tert-butyl ether	5.0	Not Detected UJ	18	Not Detected UJ
trans-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Hexane	5.0	Not Detected	18	Not Detected
1,1-Dichloroethane	5.0	Not Detected	20	Not Detected
2-Butanone (Methyl Ethyl Ketone)	20	Not Detected	59	Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Tetrahydrofuran	5.0	Not Detected	15	Not Detected
Chloroform	5.0	Not Detected	24	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	27	Not Detected
Cyclohexane	5.0	Not Detected	17	Not Detected
Carbon Tetrachloride	5.0	Not Detected	31	Not Detected
2,2,4-Trimethylpentane	5.0	Not Detected	23	Not Detected
Benzene	5.0	Not Detected	16	Not Detected
1,2-Dichloroethane	5.0	Not Detected	20	Not Detected
Heptane	5.0	Not Detected	20	Not Detected
Trichloroethene	5.0	Not Detected	27	Not Detected
1,2-Dichloropropane	5.0	Not Detected	23	Not Detected
1,4-Dioxane	20	Not Detected	72	Not Detected
Bromodichloromethane	5.0	Not Detected	34	Not Detected
cis-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
4-Methyl-2-pentanone	5.0	Not Detected	20	Not Detected
Toluene	5.0	Not Detected	19	Not Detected
trans-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
1,1,2-Trichloroethane	5.0	Not Detected	27	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
2-Hexanone	20	Not Detected	82	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2012660-05B

EPA METHOD TO-15 GC/MS

File Name:	**14123107**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/31/20 10:25 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.0	Not Detected	42	Not Detected
1,2-Dibromoethane (EDB)	5.0	Not Detected	38	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected
Styrene	5.0	Not Detected	21	Not Detected
Bromoform	5.0	Not Detected	52	Not Detected
Cumene	5.0	Not Detected	24	Not Detected
1,1,2,2-Tetrachloroethane	5.0	Not Detected	34	Not Detected
Propylbenzene	5.0	Not Detected	24	Not Detected
4-Ethyltoluene	5.0	Not Detected	24	Not Detected
1,3,5-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,2,4-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
alpha-Chlorotoluene	5.0	Not Detected	26	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	Not Detected	150	Not Detected
Hexachlorobutadiene	20	Not Detected	210	Not Detected
TPH ref. to Gasoline (MW=100)	200	Not Detected	820	Not Detected

UJ = Analyte associated with low bias in the CCV.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	76	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: CCV

Lab ID#: 2012660-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j123002**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/30/20 09:23 AM**	

Compound	%Recovery
Freon 12	106
Freon 114	103
Chloromethane	124
Vinyl Chloride	121
1,3-Butadiene	109
Bromomethane	118
Chloroethane	114
Freon 11	112
Ethanol	117
Freon 113	101
1,1-Dichloroethene	96
Acetone	101
2-Propanol	106
Carbon Disulfide	105
3-Chloropropene	101
Methylene Chloride	111
Methyl tert-butyl ether	99
trans-1,2-Dichloroethene	101
Hexane	94
1,1-Dichloroethane	103
2-Butanone (Methyl Ethyl Ketone)	105
cis-1,2-Dichloroethene	100
Tetrahydrofuran	104
Chloroform	99
1,1,1-Trichloroethane	98
Cyclohexane	99
Carbon Tetrachloride	104
2,2,4-Trimethylpentane	103
Benzene	104
1,2-Dichloroethane	107
Heptane	101
Trichloroethene	102
1,2-Dichloropropane	106
1,4-Dioxane	104
Bromodichloromethane	105
cis-1,3-Dichloropropene	104
4-Methyl-2-pentanone	100
Toluene	104
trans-1,3-Dichloropropene	107
1,1,2-Trichloroethane	102
Tetrachloroethene	104
2-Hexanone	102

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Client Sample ID: CCV

Lab ID#: 2012660-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j123002**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/30/20 09:23 AM**	

Compound	%Recovery
Dibromochloromethane	107
1,2-Dibromoethane (EDB)	105
Chlorobenzene	102
Ethyl Benzene	102
m,p-Xylene	100
o-Xylene	99
Styrene	102
Bromoform	108
Cumene	100
1,1,2,2-Tetrachloroethane	106
Propylbenzene	106
4-Ethyltoluene	104
1,3,5-Trimethylbenzene	101
1,2,4-Trimethylbenzene	104
1,3-Dichlorobenzene	109
1,4-Dichlorobenzene	106
alpha-Chlorotoluene	111
1,2-Dichlorobenzene	110
1,2,4-Trichlorobenzene	112
Hexachlorobutadiene	108
TPH ref. to Gasoline (MW=100)	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: CCV

Lab ID#: 2012660-06B

EPA METHOD TO-15 GC/MS

File Name:	**14123102**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 12/31/20 08:03 AM**

Compound	%Recovery
Freon 12	84
Freon 114	100
Chloromethane	82
Vinyl Chloride	82
1,3-Butadiene	80
Bromomethane	96
Chloroethane	90
Freon 11	91
Ethanol	95
Freon 113	104
1,1-Dichloroethene	87
Acetone	96
2-Propanol	74
Carbon Disulfide	96
3-Chloropropene	88
Methylene Chloride	90
Methyl tert-butyl ether	69 Q
trans-1,2-Dichloroethene	87
Hexane	85
1,1-Dichloroethane	85
2-Butanone (Methyl Ethyl Ketone)	83
cis-1,2-Dichloroethene	91
Tetrahydrofuran	73
Chloroform	90
1,1,1-Trichloroethane	87
Cyclohexane	88
Carbon Tetrachloride	88
2,2,4-Trimethylpentane	86
Benzene	95
1,2-Dichloroethane	81
Heptane	88
Trichloroethene	95
1,2-Dichloropropane	88
1,4-Dioxane	98
Bromodichloromethane	92
cis-1,3-Dichloropropene	85
4-Methyl-2-pentanone	78
Toluene	91
trans-1,3-Dichloropropene	80
1,1,2-Trichloroethane	96
Tetrachloroethene	108
2-Hexanone	88

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Client Sample ID: CCV

Lab ID#: 2012660-06B

EPA METHOD TO-15 GC/MS

File Name:	**14123102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/31/20 08:03 AM**	

Compound	%Recovery
Dibromochloromethane	96
1,2-Dibromoethane (EDB)	96
Chlorobenzene	96
Ethyl Benzene	92
m,p-Xylene	96
o-Xylene	92
Styrene	95
Bromoform	102
Cumene	93
1,1,2,2-Tetrachloroethane	97
Propylbenzene	98
4-Ethyltoluene	100
1,3,5-Trimethylbenzene	99
1,2,4-Trimethylbenzene	107
1,3-Dichlorobenzene	111
1,4-Dichlorobenzene	111
alpha-Chlorotoluene	86
1,2-Dichlorobenzene	111
1,2,4-Trichlorobenzene	127
Hexachlorobutadiene	135 Q
TPH ref. to Gasoline (MW=100)	100

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	76	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 2012660-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j123003**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/30/20 09:50 AM**	

Compound	%Recovery	Method Limits
Freon 12	107	70-130
Freon 114	107	70-130
Chloromethane	118	70-130
Vinyl Chloride	119	70-130
1,3-Butadiene	107	70-130
Bromomethane	110	70-130
Chloroethane	108	70-130
Freon 11	112	70-130
Ethanol	98	70-130
Freon 113	102	70-130
1,1-Dichloroethene	98	70-130
Acetone	97	70-130
2-Propanol	109	70-130
Carbon Disulfide	104	70-130
3-Chloropropene	101	70-130
Methylene Chloride	107	70-130
Methyl tert-butyl ether	98	70-130
trans-1,2-Dichloroethene	100	70-130
Hexane	92	70-130
1,1-Dichloroethane	102	70-130
2-Butanone (Methyl Ethyl Ketone)	104	70-130
cis-1,2-Dichloroethene	102	70-130
Tetrahydrofuran	106	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	97	70-130
Cyclohexane	97	70-130
Carbon Tetrachloride	100	70-130
2,2,4-Trimethylpentane	99	70-130
Benzene	102	70-130
1,2-Dichloroethane	107	70-130
Heptane	100	70-130
Trichloroethene	102	70-130
1,2-Dichloropropane	104	70-130
1,4-Dioxane	101	70-130
Bromodichloromethane	102	70-130
cis-1,3-Dichloropropene	103	70-130
4-Methyl-2-pentanone	96	70-130
Toluene	100	70-130
trans-1,3-Dichloropropene	103	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	103	70-130
2-Hexanone	100	70-130

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Client Sample ID: LCS

Lab ID#: 2012660-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j123003**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/30/20 09:50 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	105	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	102	70-130
m,p-Xylene	100	70-130
o-Xylene	100	70-130
Styrene	101	70-130
Bromoform	106	70-130
Cumene	98	70-130
1,1,2,2-Tetrachloroethane	101	70-130
Propylbenzene	103	70-130
4-Ethyltoluene	102	70-130
1,3,5-Trimethylbenzene	97	70-130
1,2,4-Trimethylbenzene	102	70-130
1,3-Dichlorobenzene	106	70-130
1,4-Dichlorobenzene	105	70-130
alpha-Chlorotoluene	107	70-130
1,2-Dichlorobenzene	105	70-130
1,2,4-Trichlorobenzene	113	70-130
Hexachlorobutadiene	113	70-130
TPH ref. to Gasoline (MW=100)	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCSD

Lab ID#: 2012660-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j123004**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/30/20 10:18 AM**	

Compound	%Recovery	Method Limits
Freon 12	106	70-130
Freon 114	105	70-130
Chloromethane	115	70-130
Vinyl Chloride	115	70-130
1,3-Butadiene	105	70-130
Bromomethane	108	70-130
Chloroethane	106	70-130
Freon 11	111	70-130
Ethanol	97	70-130
Freon 113	101	70-130
1,1-Dichloroethene	97	70-130
Acetone	98	70-130
2-Propanol	108	70-130
Carbon Disulfide	102	70-130
3-Chloropropene	101	70-130
Methylene Chloride	105	70-130
Methyl tert-butyl ether	99	70-130
trans-1,2-Dichloroethene	99	70-130
Hexane	92	70-130
1,1-Dichloroethane	100	70-130
2-Butanone (Methyl Ethyl Ketone)	104	70-130
cis-1,2-Dichloroethene	100	70-130
Tetrahydrofuran	102	70-130
Chloroform	96	70-130
1,1,1-Trichloroethane	96	70-130
Cyclohexane	96	70-130
Carbon Tetrachloride	99	70-130
2,2,4-Trimethylpentane	98	70-130
Benzene	101	70-130
1,2-Dichloroethane	106	70-130
Heptane	100	70-130
Trichloroethene	102	70-130
1,2-Dichloropropane	101	70-130
1,4-Dioxane	101	70-130
Bromodichloromethane	101	70-130
cis-1,3-Dichloropropene	102	70-130
4-Methyl-2-pentanone	97	70-130
Toluene	99	70-130
trans-1,3-Dichloropropene	104	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	103	70-130
2-Hexanone	99	70-130

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Client Sample ID: LCSD

Lab ID#: 2012660-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j123004**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/30/20 10:18 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	106	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	101	70-130
m,p-Xylene	101	70-130
o-Xylene	100	70-130
Styrene	100	70-130
Bromoform	106	70-130
Cumene	99	70-130
1,1,2,2-Tetrachloroethane	101	70-130
Propylbenzene	104	70-130
4-Ethyltoluene	106	70-130
1,3,5-Trimethylbenzene	103	70-130
1,2,4-Trimethylbenzene	103	70-130
1,3-Dichlorobenzene	107	70-130
1,4-Dichlorobenzene	106	70-130
alpha-Chlorotoluene	108	70-130
1,2-Dichlorobenzene	105	70-130
1,2,4-Trichlorobenzene	118	70-130
Hexachlorobutadiene	119	70-130
TPH ref. to Gasoline (MW=100)	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCS

Lab ID#: 2012660-07B

EPA METHOD TO-15 GC/MS

File Name:	**14123104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/31/20 08:51 AM**	

Compound	%Recovery	Method Limits
Freon 12	94	70-130
Freon 114	108	70-130
Chloromethane	91	70-130
Vinyl Chloride	87	70-130
1,3-Butadiene	84	70-130
Bromomethane	105	70-130
Chloroethane	100	70-130
Freon 11	98	70-130
Ethanol	83	70-130
Freon 113	111	70-130
1,1-Dichloroethene	92	70-130
Acetone	101	70-130
2-Propanol	83	70-130
Carbon Disulfide	101	70-130
3-Chloropropene	96	70-130
Methylene Chloride	90	70-130
Methyl tert-butyl ether	87	70-130
trans-1,2-Dichloroethene	96	70-130
Hexane	90	70-130
1,1-Dichloroethane	90	70-130
2-Butanone (Methyl Ethyl Ketone)	91	70-130
cis-1,2-Dichloroethene	100	70-130
Tetrahydrofuran	76	70-130
Chloroform	95	70-130
1,1,1-Trichloroethane	92	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	94	70-130
2,2,4-Trimethylpentane	90	70-130
Benzene	104	70-130
1,2-Dichloroethane	86	70-130
Heptane	90	70-130
Trichloroethene	102	70-130
1,2-Dichloropropane	91	70-130
1,4-Dioxane	104	70-130
Bromodichloromethane	95	70-130
cis-1,3-Dichloropropene	91	70-130
4-Methyl-2-pentanone	82	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	94	70-130
1,1,2-Trichloroethane	102	70-130
Tetrachloroethene	113	70-130
2-Hexanone	98	70-130

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Client Sample ID: LCS

Lab ID#: 2012660-07B

EPA METHOD TO-15 GC/MS

File Name:	**14123104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/31/20 08:51 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	103	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	100	70-130
m,p-Xylene	104	70-130
o-Xylene	97	70-130
Styrene	96	70-130
Bromoform	105	70-130
Cumene	94	70-130
1,1,2,2-Tetrachloroethane	98	70-130
Propylbenzene	100	70-130
4-Ethyltoluene	101	70-130
1,3,5-Trimethylbenzene	95	70-130
1,2,4-Trimethylbenzene	101	70-130
1,3-Dichlorobenzene	105	70-130
1,4-Dichlorobenzene	104	70-130
alpha-Chlorotoluene	86	70-130
1,2-Dichlorobenzene	101	70-130
1,2,4-Trichlorobenzene	83	70-130
Hexachlorobutadiene	95	70-130
TPH ref. to Gasoline (MW=100)	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	78	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCSD

Lab ID#: 2012660-07BB

EPA METHOD TO-15 GC/MS

File Name:	**14123105**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/31/20 09:17 AM**	

Compound	%Recovery	Method Limits
Freon 12	90	70-130
Freon 114	104	70-130
Chloromethane	87	70-130
Vinyl Chloride	83	70-130
1,3-Butadiene	85	70-130
Bromomethane	102	70-130
Chloroethane	97	70-130
Freon 11	94	70-130
Ethanol	77	70-130
Freon 113	107	70-130
1,1-Dichloroethene	90	70-130
Acetone	98	70-130
2-Propanol	82	70-130
Carbon Disulfide	98	70-130
3-Chloropropene	99	70-130
Methylene Chloride	87	70-130
Methyl tert-butyl ether	87	70-130
trans-1,2-Dichloroethene	91	70-130
Hexane	89	70-130
1,1-Dichloroethane	88	70-130
2-Butanone (Methyl Ethyl Ketone)	87	70-130
cis-1,2-Dichloroethene	95	70-130
Tetrahydrofuran	76	70-130
Chloroform	91	70-130
1,1,1-Trichloroethane	89	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	90	70-130
2,2,4-Trimethylpentane	86	70-130
Benzene	101	70-130
1,2-Dichloroethane	89	70-130
Heptane	92	70-130
Trichloroethene	102	70-130
1,2-Dichloropropane	91	70-130
1,4-Dioxane	106	70-130
Bromodichloromethane	97	70-130
cis-1,3-Dichloropropene	96	70-130
4-Methyl-2-pentanone	80	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	94	70-130
1,1,2-Trichloroethane	98	70-130
Tetrachloroethene	111	70-130
2-Hexanone	97	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2012660-07BB

EPA METHOD TO-15 GC/MS

File Name:	**14123105**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/31/20 09:17 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	101	70-130
1,2-Dibromoethane (EDB)	103	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	103	70-130
o-Xylene	96	70-130
Styrene	97	70-130
Bromoform	106	70-130
Cumene	94	70-130
1,1,2,2-Tetrachloroethane	100	70-130
Propylbenzene	98	70-130
4-Ethyltoluene	99	70-130
1,3,5-Trimethylbenzene	96	70-130
1,2,4-Trimethylbenzene	103	70-130
1,3-Dichlorobenzene	105	70-130
1,4-Dichlorobenzene	103	70-130
alpha-Chlorotoluene	88	70-130
1,2-Dichlorobenzene	101	70-130
1,2,4-Trichlorobenzene	91	70-130
Hexachlorobutadiene	94	70-130
TPH ref. to Gasoline (MW=100)	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	74	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	106	70-130

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Analysis Request /Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: 2012660

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

Click links below to view:
Canister Sampling Guide
Helium Shroud Video

Client: GeoDesign Inc PID:
Project Name: BigBeams-1-04
Project Manager: Kyle Haggart P.O.#
Sampler: Kyle Haggart
Site Name: Former Astoria Warehousing

Special Instructions/Notes:

Turnaround Time (Rush surcharges may apply): 10 day

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Canister Vacuum/Pressure		Lab Use Only		Requested Analyses			
				Date	Time	Date	Time	Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N_2 / He	Gasoline-range hydrocarbons and VOCs TO-15			
01A	VP-1(121720)	1L1859	25231	12.17.20	817	12.17.20	822	29	8			X			
02A	VP-2(121720)	1L3915	23605	12.17.20	834	12.17.20	838	28	8			X			
03A	VP-3(121720)	1L2530	23287	12.17.20	902	12.17.20	906	27	8			X			
04A	VP-4(121720)	1L2911	24726	12.17.20	850	12.17.20	854	28	8			X			

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
	12.21.20	1520		12/28/20	1200
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: FedEx | Custody Seals Intact? | Yes | No | None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

ANALYTICAL REPORT

December 29, 2020

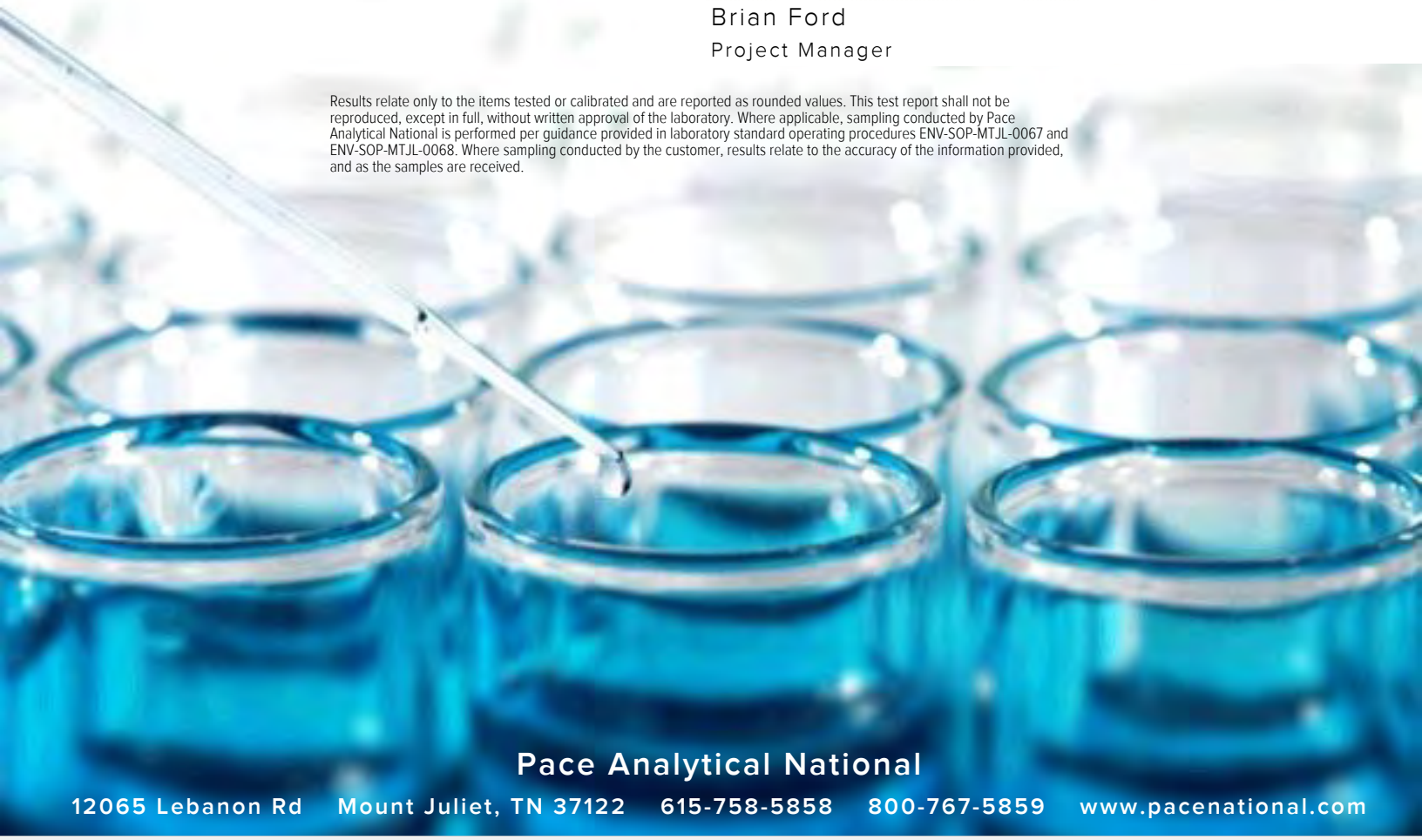
GeoDesign Inc. - Wilsonville, OR

Sample Delivery Group:	L1299742
Samples Received:	12/22/2020
Project Number:	BIGBEAMS-1-04
Description:	

Report To: Kyle Haggart
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Entire Report Reviewed By:

Brian Ford
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

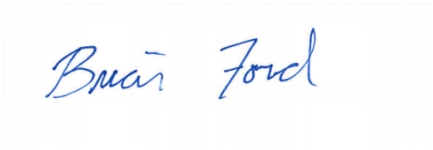
TABLE OF CONTENTS

PRE(121820) L1299742-01 Air

Collected by: Kyle Haggart
Collected date/time: 12/18/20 15:09
Received date/time: 12/22/20 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1597598	80	12/26/20 19:59	12/26/20 19:59	CAW	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG1598062	1000	12/28/20 17:46	12/28/20 17:46	CAW	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

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	100	238	246	585		80	WG1597598
Allyl chloride	107-05-1	76.53	16.0	50.1	ND	ND		80	WG1597598
Benzene	71-43-2	78.10	200	639	16400	52400		1000	WG1598062
Benzyl Chloride	100-44-7	127	16.0	83.1	ND	ND		80	WG1597598
Bromodichloromethane	75-27-4	164	16.0	107	ND	ND		80	WG1597598
Bromoform	75-25-2	253	48.0	497	ND	ND		80	WG1597598
Bromomethane	74-83-9	94.90	16.0	62.1	ND	ND		80	WG1597598
1,3-Butadiene	106-99-0	54.10	160	354	ND	ND		80	WG1597598
Carbon disulfide	75-15-0	76.10	16.0	49.8	ND	ND		80	WG1597598
Carbon tetrachloride	56-23-5	154	16.0	101	ND	ND		80	WG1597598
Chlorobenzene	108-90-7	113	16.0	73.9	ND	ND		80	WG1597598
Chloroethane	75-00-3	64.50	16.0	42.2	ND	ND		80	WG1597598
Chloroform	67-66-3	119	16.0	77.9	ND	ND		80	WG1597598
Chloromethane	74-87-3	50.50	16.0	33.0	ND	ND		80	WG1597598
2-Chlorotoluene	95-49-8	126	16.0	82.5	ND	ND		80	WG1597598
Cyclohexane	110-82-7	84.20	200	689	27600	95000		1000	WG1598062
Dibromochloromethane	124-48-1	208	16.0	136	ND	ND		80	WG1597598
1,2-Dibromoethane	106-93-4	188	16.0	123	ND	ND		80	WG1597598
1,2-Dichlorobenzene	95-50-1	147	16.0	96.2	ND	ND		80	WG1597598
1,3-Dichlorobenzene	541-73-1	147	16.0	96.2	ND	ND		80	WG1597598
1,4-Dichlorobenzene	106-46-7	147	16.0	96.2	ND	ND		80	WG1597598
1,2-Dichloroethane	107-06-2	99	16.0	64.8	ND	ND		80	WG1597598
1,1-Dichloroethane	75-34-3	98	16.0	64.1	ND	ND		80	WG1597598
1,1-Dichloroethene	75-35-4	96.90	16.0	63.4	ND	ND		80	WG1597598
cis-1,2-Dichloroethene	156-59-2	96.90	16.0	63.4	ND	ND		80	WG1597598
trans-1,2-Dichloroethene	156-60-5	96.90	16.0	63.4	ND	ND		80	WG1597598
1,2-Dichloropropane	78-87-5	113	16.0	73.9	ND	ND		80	WG1597598
cis-1,3-Dichloropropene	10061-01-5	111	16.0	72.6	ND	ND		80	WG1597598
trans-1,3-Dichloropropene	10061-02-6	111	16.0	72.6	ND	ND		80	WG1597598
1,4-Dioxane	123-91-1	88.10	16.0	57.7	ND	ND		80	WG1597598
Ethanol	64-17-5	46.10	50.4	95.0	1040	1960		80	WG1597598
Ethylbenzene	100-41-4	106	16.0	69.4	7950	34500		80	WG1597598
4-Ethyltoluene	622-96-8	120	16.0	78.5	1130	5550		80	WG1597598
Trichlorofluoromethane	75-69-4	137.40	16.0	89.9	ND	ND		80	WG1597598
Dichlorodifluoromethane	75-71-8	120.92	16.0	79.1	ND	ND		80	WG1597598
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	16.0	123	ND	ND		80	WG1597598
1,2-Dichlorotetrafluoroethane	76-14-2	171	16.0	112	ND	ND		80	WG1597598
Heptane	142-82-5	100	200	818	32000	131000		1000	WG1598062
Hexachloro-1,3-butadiene	87-68-3	261	50.4	538	ND	ND		80	WG1597598
n-Hexane	110-54-3	86.20	630	2220	95900	338000		1000	WG1598062
Isopropylbenzene	98-82-8	120.20	16.0	78.7	336	1650		80	WG1597598
Methylene Chloride	75-09-2	84.90	16.0	55.6	ND	ND		80	WG1597598
Methyl Butyl Ketone	591-78-6	100	100	409	ND	ND		80	WG1597598
2-Butanone (MEK)	78-93-3	72.10	100	295	ND	ND		80	WG1597598
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	100	409	ND	ND		80	WG1597598
Methyl methacrylate	80-62-6	100.12	16.0	65.5	ND	ND		80	WG1597598
MTBE	1634-04-4	88.10	16.0	57.7	ND	ND		80	WG1597598
Naphthalene	91-20-3	128	50.4	264	ND	ND		80	WG1597598
2-Propanol	67-63-0	60.10	100	246	708	1740		80	WG1597598
Propene	115-07-1	42.10	32.0	55.1	42.2	72.7		80	WG1597598
Styrene	100-42-5	104	16.0	68.1	ND	ND		80	WG1597598
1,1,2,2-Tetrachloroethane	79-34-5	168	16.0	110	ND	ND		80	WG1597598
Tetrachloroethylene	127-18-4	166	16.0	109	ND	ND		80	WG1597598
Tetrahydrofuran	109-99-9	72.10	16.0	47.2	ND	ND		80	WG1597598
Toluene	108-88-3	92.10	40.0	151	230	866		80	WG1597598
1,2,4-Trichlorobenzene	120-82-1	181	50.4	373	ND	ND		80	WG1597598

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	16.0	87.0	ND	ND		80	WG1597598
1,1,2-Trichloroethane	79-00-5	133	16.0	87.0	ND	ND		80	WG1597598
Trichloroethylene	79-01-6	131	16.0	85.7	ND	ND		80	WG1597598
1,2,4-Trimethylbenzene	95-63-6	120	16.0	78.5	2310	11300		80	WG1597598
1,3,5-Trimethylbenzene	108-67-8	120	16.0	78.5	727	3570		80	WG1597598
2,2,4-Trimethylpentane	540-84-1	114.22	200	934	38900	182000		1000	WG1598062
Vinyl chloride	75-01-4	62.50	16.0	40.9	ND	ND		80	WG1597598
Vinyl Bromide	593-60-2	106.95	16.0	70.0	ND	ND		80	WG1597598
Vinyl acetate	108-05-4	86.10	16.0	56.3	ND	ND		80	WG1597598
m&p-Xylene	1330-20-7	106	32.0	139	8900	38600		80	WG1597598
o-Xylene	95-47-6	106	16.0	69.4	470	2040		80	WG1597598
TPH (GC/MS) Low Fraction	8006-61-9	101	200000	826000	826000	3410000		1000	WG1598062
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*95.4*				WG1597598
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*92.7*				WG1598062

Sample Narrative:

L1299742-01 WG1597598: Surrogate failure due to matrix interference.

Method Blank (MB)

(MB) R3607336-3 12/26/20 11:41

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.584	1.25
Allyl Chloride	U		0.114	0.200
Benzyl Chloride	U		0.0598	0.200
Bromodichloromethane	U		0.0702	0.200
Bromoform	U		0.0732	0.600
Bromomethane	U		0.0982	0.200
1,3-Butadiene	U		0.104	2.00
Carbon disulfide	U		0.102	0.200
Carbon tetrachloride	U		0.0732	0.200
Chlorobenzene	U		0.0832	0.200
Chloroethane	U		0.0996	0.200
Chloroform	U		0.0717	0.200
Chloromethane	U		0.103	0.200
2-Chlorotoluene	U		0.0828	0.200
Dibromochloromethane	U		0.0727	0.200
1,2-Dibromoethane	U		0.0721	0.200
1,2-Dichlorobenzene	U		0.128	0.200
1,3-Dichlorobenzene	U		0.182	0.200
1,4-Dichlorobenzene	U		0.0557	0.200
1,2-Dichloroethane	U		0.0700	0.200
1,1-Dichloroethane	U		0.0723	0.200
1,1-Dichloroethene	U		0.0762	0.200
cis-1,2-Dichloroethene	U		0.0784	0.200
trans-1,2-Dichloroethene	U		0.0673	0.200
1,2-Dichloropropane	U		0.0760	0.200
cis-1,3-Dichloropropene	U		0.0689	0.200
trans-1,3-Dichloropropene	U		0.0728	0.200
1,4-Dioxane	U		0.0833	0.200
Ethylbenzene	U		0.0835	0.200
4-Ethyltoluene	U		0.0783	0.200
Trichlorofluoromethane	U		0.0819	0.200
Dichlorodifluoromethane	U		0.137	0.200
1,1,2-Trichlorotrifluoroethane	U		0.0793	0.200
1,2-Dichlorotetrafluoroethane	U		0.0890	0.200
Hexachloro-1,3-butadiene	U		0.105	0.630
Isopropylbenzene	U		0.0777	0.200
Methylene Chloride	U		0.0979	0.200
Methyl Butyl Ketone	U		0.133	1.25
2-Butanone (MEK)	U		0.0814	1.25
4-Methyl-2-pentanone (MIBK)	U		0.0765	1.25

Method Blank (MB)

(MB) R3607336-3 12/26/20 11:41

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Methyl Methacrylate	U		0.0876	0.200
MTBE	U		0.0647	0.200
Naphthalene	U		0.350	0.630
2-Propanol	U		0.264	1.25
Propene	U		0.0932	0.400
Styrene	U		0.0788	0.200
1,1,2,2-Tetrachloroethane	U		0.0743	0.200
Tetrachloroethylene	U		0.0814	0.200
Tetrahydrofuran	U		0.0734	0.200
Toluene	U		0.0870	0.500
1,2,4-Trichlorobenzene	U		0.148	0.630
1,1,1-Trichloroethane	U		0.0736	0.200
1,1,2-Trichloroethane	U		0.0775	0.200
Trichloroethylene	U		0.0680	0.200
1,2,4-Trimethylbenzene	U		0.0764	0.200
1,3,5-Trimethylbenzene	U		0.0779	0.200
Vinyl chloride	U		0.0949	0.200
Vinyl Bromide	U		0.0852	0.200
Vinyl acetate	U		0.116	0.200
m&p-Xylene	U		0.135	0.400
o-Xylene	U		0.0828	0.200
Ethanol	U		0.265	0.630
(S) 1,4-Bromofluorobenzene	*91.6*			*60.0-140*

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

(LCS) R3607336-1 12/26/20 10:17 • (LCSD) R3607336-2 12/26/20 11:00

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethanol	3.75	4.65	4.42	124	118	55.0-148			5.07	25
Propene	3.75	3.33	3.27	88.8	87.2	64.0-144			1.82	25
Dichlorodifluoromethane	3.75	3.55	3.49	94.7	93.1	64.0-139			1.70	25
1,2-Dichlorotetrafluoroethane	3.75	3.41	3.37	90.9	89.9	70.0-130			1.18	25
Chloromethane	3.75	3.46	3.39	92.3	90.4	70.0-130			2.04	25
Vinyl chloride	3.75	3.45	3.36	92.0	89.6	70.0-130			2.64	25
1,3-Butadiene	3.75	3.01	2.90	80.3	77.3	70.0-130			3.72	25
Bromomethane	3.75	4.32	4.29	115	114	70.0-130			0.697	25
Chloroethane	3.75	4.84	4.82	129	129	70.0-130			0.414	25
Trichlorofluoromethane	3.75	4.47	4.43	119	118	70.0-130			0.899	25

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

(LCS) R3607336-1 12/26/20 10:17 • (LCSD) R3607336-2 12/26/20 11:00

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,1,2-Trichlorotrifluoroethane	3.75	4.51	4.50	120	120	70.0-130			0.222	25
1,1-Dichloroethene	3.75	4.59	4.53	122	121	70.0-130			1.32	25
1,1-Dichloroethane	3.75	4.55	4.50	121	120	70.0-130			1.10	25
Acetone	3.75	4.53	4.45	121	119	70.0-130			1.78	25
2-Propanol	3.75	4.36	4.34	116	116	70.0-139			0.460	25
Carbon disulfide	3.75	4.55	4.47	121	119	70.0-130			1.77	25
Methylene Chloride	3.75	4.54	4.44	121	118	70.0-130			2.23	25
MTBE	3.75	4.42	4.36	118	116	70.0-130			1.37	25
trans-1,2-Dichloroethene	3.75	4.58	4.47	122	119	70.0-130			2.43	25
Vinyl acetate	3.75	4.44	4.45	118	119	70.0-130			0.225	25
Methyl Ethyl Ketone	3.75	4.64	4.74	124	126	70.0-130			2.13	25
cis-1,2-Dichloroethene	3.75	4.56	4.56	122	122	70.0-130			0.000	25
Chloroform	3.75	4.43	4.39	118	117	70.0-130			0.907	25
1,1,1-Trichloroethane	3.75	4.40	4.39	117	117	70.0-130			0.228	25
Carbon tetrachloride	3.75	4.47	4.37	119	117	70.0-130			2.26	25
1,2-Dichloroethane	3.75	4.38	4.44	117	118	70.0-130			1.36	25
Trichloroethylene	3.75	4.38	4.39	117	117	70.0-130			0.228	25
1,2-Dichloropropane	3.75	4.51	4.50	120	120	70.0-130			0.222	25
1,4-Dioxane	3.75	4.36	4.40	116	117	70.0-140			0.913	25
Bromodichloromethane	3.75	4.42	4.33	118	115	70.0-130			2.06	25
cis-1,3-Dichloropropene	3.75	4.48	4.42	119	118	70.0-130			1.35	25
4-Methyl-2-pentanone (MIBK)	3.75	4.57	4.52	122	121	70.0-139			1.10	25
Toluene	3.75	4.38	4.33	117	115	70.0-130			1.15	25
trans-1,3-Dichloropropene	3.75	4.48	4.50	119	120	70.0-130			0.445	25
1,1,2-Trichloroethane	3.75	4.42	4.33	118	115	70.0-130			2.06	25
Tetrachloroethylene	3.75	4.37	4.37	117	117	70.0-130			0.000	25
Methyl Butyl Ketone	3.75	4.71	4.63	126	123	70.0-149			1.71	25
Dibromochloromethane	3.75	4.46	4.46	119	119	70.0-130			0.000	25
1,2-Dibromoethane	3.75	4.48	4.51	119	120	70.0-130			0.667	25
Chlorobenzene	3.75	4.49	4.46	120	119	70.0-130			0.670	25
Ethylbenzene	3.75	4.47	4.39	119	117	70.0-130			1.81	25
m&p-Xylene	7.50	8.82	8.71	118	116	70.0-130			1.25	25
o-Xylene	3.75	4.20	4.17	112	111	70.0-130			0.717	25
Styrene	3.75	4.40	4.29	117	114	70.0-130			2.53	25
Bromoform	3.75	4.30	4.30	115	115	70.0-130			0.000	25
1,1,2,2-Tetrachloroethane	3.75	4.35	4.29	116	114	70.0-130			1.39	25
4-Ethyltoluene	3.75	4.41	4.35	118	116	70.0-130			1.37	25
1,3,5-Trimethylbenzene	3.75	4.28	4.29	114	114	70.0-130			0.233	25
1,2,4-Trimethylbenzene	3.75	4.29	4.25	114	113	70.0-130			0.937	25
1,3-Dichlorobenzene	3.75	4.37	4.39	117	117	70.0-130			0.457	25

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

(LCS) R3607336-1 12/26/20 10:17 • (LCSD) R3607336-2 12/26/20 11:00

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,4-Dichlorobenzene	3.75	4.44	4.42	118	118	70.0-130			0.451	25
Benzyl Chloride	3.75	4.47	4.42	119	118	70.0-152			1.12	25
1,2-Dichlorobenzene	3.75	4.39	4.37	117	117	70.0-130			0.457	25
1,2,4-Trichlorobenzene	3.75	4.85	4.82	129	129	70.0-160			0.620	25
Hexachloro-1,3-butadiene	3.75	4.36	4.30	116	115	70.0-151			1.39	25
Naphthalene	3.75	4.32	4.30	115	115	70.0-159			0.464	25
Allyl Chloride	3.75	4.72	4.52	126	121	70.0-130			4.33	25
2-Chlorotoluene	3.75	4.30	4.28	115	114	70.0-130			0.466	25
Methyl Methacrylate	3.75	4.52	4.56	121	122	70.0-130			0.881	25
Tetrahydrofuran	3.75	4.73	4.73	126	126	70.0-137			0.000	25
Vinyl Bromide	3.75	4.57	4.50	122	120	70.0-130			1.54	25
Isopropylbenzene	3.75	4.29	4.23	114	113	70.0-130			1.41	25
(S) 1,4-Bromofluorobenzene				*93.2*	*93.2*	*60.0-140*				

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

Method Blank (MB)

(MB) R3607613-3 12/28/20 10:16

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Benzene	U		0.0715	0.200
Cyclohexane	U		0.0753	0.200
Heptane	U		0.104	0.200
n-Hexane	U		0.206	0.630
2,2,4-Trimethylpentane	U		0.133	0.200
TPH (GC/MS) Low Fraction	U		39.7	200
(S) 1,4-Bromofluorobenzene	*91.8*			*60.0-140*

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

(LCS) R3607613-1 12/28/20 08:54 • (LCSD) R3607613-2 12/28/20 09:36

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
n-Hexane	3.75	4.62	4.54	123	121	70.0-130			1.75	25
Cyclohexane	3.75	4.60	4.54	123	121	70.0-130			1.31	25
Benzene	3.75	4.54	4.49	121	120	70.0-130			1.11	25
Heptane	3.75	3.90	3.89	104	104	70.0-130			0.257	25
TPH (GC/MS) Low Fraction	203	249	247	123	122	70.0-130			0.806	25
2,2,4-Trimethylpentane	3.75	4.55	4.58	121	122	70.0-130			0.657	25
(S) 1,4-Bromofluorobenzene				*93.6*	*93.4*	*60.0-140*				

Guide to Reading and Understanding Your Laboratory Report

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

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

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
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

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

ACCREDITATIONS & LOCATIONS

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	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	LAO00356
Kentucky [1 6]	KY90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-20-18
Maine	TN00003	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	998093910
Montana	CERT0086	Wyoming	A2LA

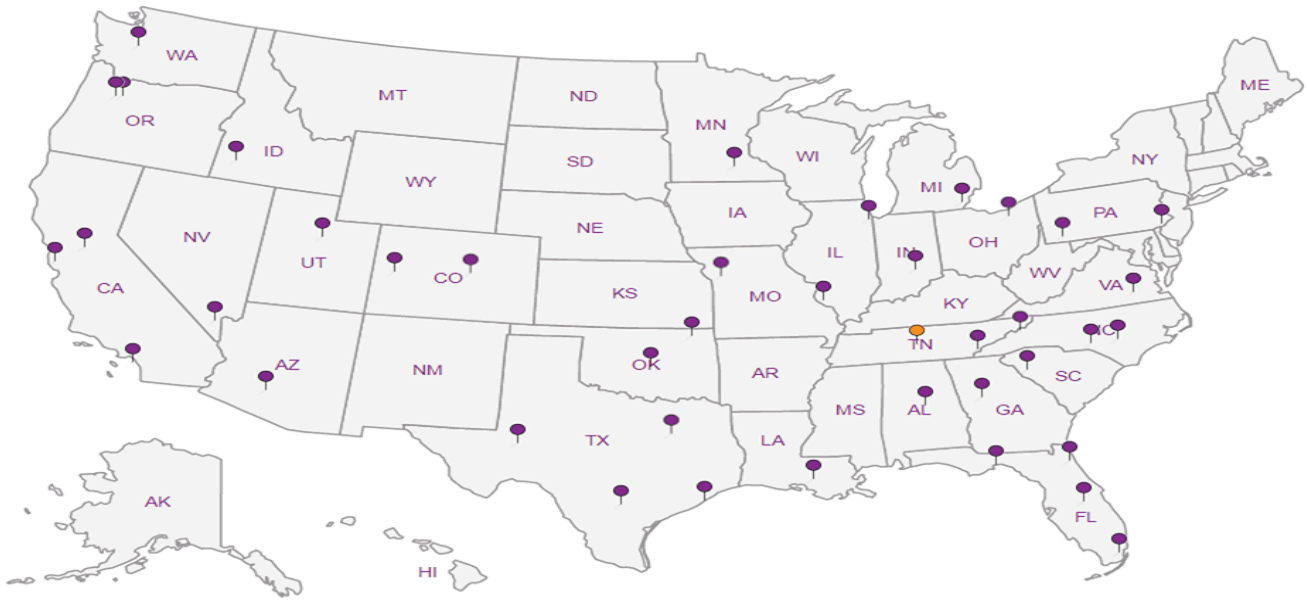
Third Party Federal Accreditations

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.



GeoDesign Inc. - Wilsonville, OR

9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Billing Information:

Accounts Payable
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

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: ~~Tim Hainley~~

Email To: th~~ainley~~@geodesigninc.com;khaggart@geodesi

Project Description:

City/State Collected: Astoria, OR

Please Circle: PT MT CT ET

Phone: 503-968-8787

Client Project # BigBeams-1-04

Lab Project # GEODESPOR-HAINLEY

SDG # 129792

Tabl M076

Collected by (print): Kyle Haggart

Site/Facility ID #

P.O. #

Acctnum: GEODESPOR

Collected by (signature):

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

Quote #

Date Results Needed

Template: T177330

Prelogin: P808392

PM: 110 - Brian Ford

PB: ESG 11/09/20

Immediately Packed on Ice N X Y ___

Shipped Via: FedEX Saver

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOCs TO-15 Summa	Remarks	Sample # (lab only)
RE (121520)		Air		12.18.20	1509	1	X		-01
		Air							
		Air							
		Air							
		Air							
		Air							
		Air							

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

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 9362 4938 1450

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
	12.21.20	1518		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
				AMB 1
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:
			Josh Mezinsky	12/22/20 9:30

If preservation required by Login: Date/Time

Hold: Condition NCF / OK

ANALYTICAL REPORT

December 31, 2020

GeoDesign Inc. - Wilsonville, OR

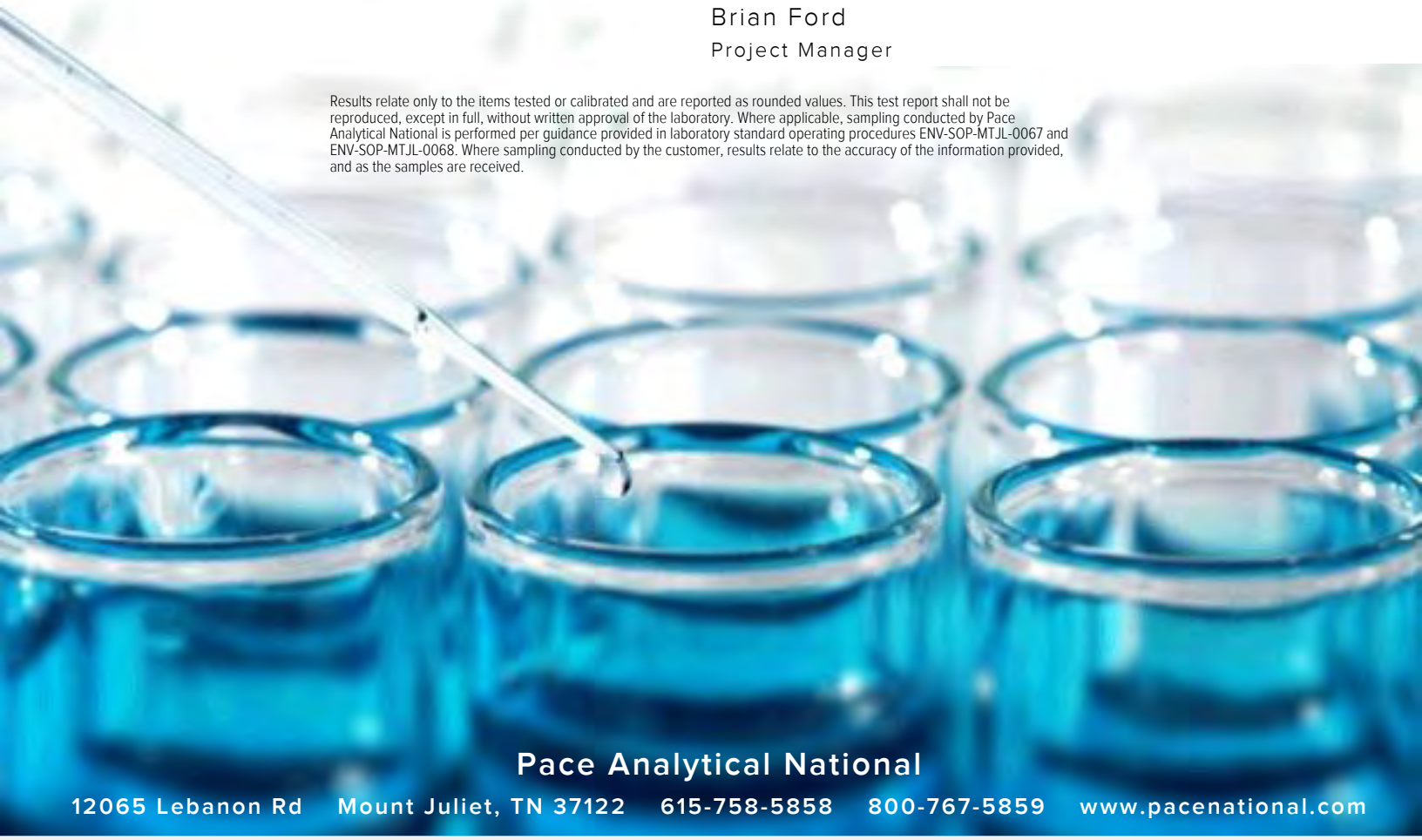
Sample Delivery Group:	L1299910
Samples Received:	12/22/2020
Project Number:	BigBeams-1-04
Description:	BigBeams-1-04

Report To:

Kyle Haggart
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Entire Report Reviewed By:

Brian Ford
Project Manager



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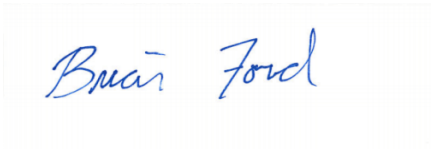
PRE(122020) L1299910-01 Air

Collected by: Kris Collier
Collected date/time: 12/20/20 13:32
Received date/time: 12/22/20 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1598004	80	12/28/20 13:52	12/28/20 13:52	MBF	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG1599038	2000	12/31/20 00:57	12/31/20 00:57	DAH	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

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	100	238	233	554		80	WG1598004
Allyl chloride	107-05-1	76.53	16.0	50.1	ND	ND		80	WG1598004
Benzene	71-43-2	78.10	400	1280	13400	42800		2000	WG1599038
Benzyl Chloride	100-44-7	127	16.0	83.1	ND	ND		80	WG1598004
Bromodichloromethane	75-27-4	164	16.0	107	ND	ND		80	WG1598004
Bromoform	75-25-2	253	48.0	497	ND	ND		80	WG1598004
Bromomethane	74-83-9	94.90	16.0	62.1	ND	ND		80	WG1598004
1,3-Butadiene	106-99-0	54.10	160	354	ND	ND		80	WG1598004
Carbon disulfide	75-15-0	76.10	16.0	49.8	ND	ND		80	WG1598004
Carbon tetrachloride	56-23-5	154	16.0	101	ND	ND		80	WG1598004
Chlorobenzene	108-90-7	113	16.0	73.9	ND	ND		80	WG1598004
Chloroethane	75-00-3	64.50	16.0	42.2	ND	ND		80	WG1598004
Chloroform	67-66-3	119	16.0	77.9	ND	ND		80	WG1598004
Chloromethane	74-87-3	50.50	16.0	33.0	ND	ND		80	WG1598004
2-Chlorotoluene	95-49-8	126	16.0	82.5	ND	ND		80	WG1598004
Cyclohexane	110-82-7	84.20	400	1380	19200	66100		2000	WG1599038
Dibromochloromethane	124-48-1	208	16.0	136	ND	ND		80	WG1598004
1,2-Dibromoethane	106-93-4	188	16.0	123	ND	ND		80	WG1598004
1,2-Dichlorobenzene	95-50-1	147	16.0	96.2	ND	ND		80	WG1598004
1,3-Dichlorobenzene	541-73-1	147	16.0	96.2	ND	ND		80	WG1598004
1,4-Dichlorobenzene	106-46-7	147	16.0	96.2	ND	ND		80	WG1598004
1,2-Dichloroethane	107-06-2	99	16.0	64.8	ND	ND		80	WG1598004
1,1-Dichloroethane	75-34-3	98	16.0	64.1	ND	ND		80	WG1598004
1,1-Dichloroethene	75-35-4	96.90	16.0	63.4	ND	ND		80	WG1598004
cis-1,2-Dichloroethene	156-59-2	96.90	16.0	63.4	ND	ND		80	WG1598004
trans-1,2-Dichloroethene	156-60-5	96.90	16.0	63.4	ND	ND		80	WG1598004
1,2-Dichloropropane	78-87-5	113	16.0	73.9	ND	ND		80	WG1598004
cis-1,3-Dichloropropene	10061-01-5	111	16.0	72.6	ND	ND		80	WG1598004
trans-1,3-Dichloropropene	10061-02-6	111	16.0	72.6	ND	ND		80	WG1598004
1,4-Dioxane	123-91-1	88.10	16.0	57.7	ND	ND		80	WG1598004
Ethanol	64-17-5	46.10	50.4	95.0	462	871		80	WG1598004
Ethylbenzene	100-41-4	106	400	1730	16200	70200		2000	WG1599038
4-Ethyltoluene	622-96-8	120	16.0	78.5	3170	15600		80	WG1598004
Trichlorofluoromethane	75-69-4	137.40	16.0	89.9	ND	ND		80	WG1598004
Dichlorodifluoromethane	75-71-8	120.92	16.0	79.1	ND	ND		80	WG1598004
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	16.0	123	ND	ND		80	WG1598004
1,2-Dichlorotetrafluoroethane	76-14-2	171	16.0	112	ND	ND		80	WG1598004
Heptane	142-82-5	100	400	1640	30900	126000		2000	WG1599038
Hexachloro-1,3-butadiene	87-68-3	261	50.4	538	ND	ND		80	WG1598004
n-Hexane	110-54-3	86.20	1260	4440	52100	184000		2000	WG1599038
Isopropylbenzene	98-82-8	120.20	16.0	78.7	865	4250		80	WG1598004
Methylene Chloride	75-09-2	84.90	16.0	55.6	ND	ND		80	WG1598004
Methyl Butyl Ketone	591-78-6	100	100	409	ND	ND		80	WG1598004
2-Butanone (MEK)	78-93-3	72.10	100	295	ND	ND		80	WG1598004
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	100	409	ND	ND		80	WG1598004
Methyl methacrylate	80-62-6	100.12	16.0	65.5	ND	ND		80	WG1598004
MTBE	1634-04-4	88.10	16.0	57.7	ND	ND		80	WG1598004
Naphthalene	91-20-3	128	50.4	264	ND	ND		80	WG1598004
2-Propanol	67-63-0	60.10	100	246	494	1210		80	WG1598004
Propene	115-07-1	42.10	32.0	55.1	52.4	90.2	B	80	WG1598004
Styrene	100-42-5	104	16.0	68.1	ND	ND		80	WG1598004
1,1,2,2-Tetrachloroethane	79-34-5	168	16.0	110	ND	ND		80	WG1598004
Tetrachloroethylene	127-18-4	166	16.0	109	ND	ND		80	WG1598004
Tetrahydrofuran	109-99-9	72.10	16.0	47.2	ND	ND		80	WG1598004
Toluene	108-88-3	92.10	40.0	151	382	1440		80	WG1598004
1,2,4-Trichlorobenzene	120-82-1	181	50.4	373	ND	ND		80	WG1598004

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	16.0	87.0	ND	ND		80	WG1598004
1,1,2-Trichloroethane	79-00-5	133	16.0	87.0	ND	ND		80	WG1598004
Trichloroethylene	79-01-6	131	16.0	85.7	ND	ND		80	WG1598004
1,2,4-Trimethylbenzene	95-63-6	120	16.0	78.5	6150	30200		80	WG1598004
1,3,5-Trimethylbenzene	108-67-8	120	16.0	78.5	1600	7850		80	WG1598004
2,2,4-Trimethylpentane	540-84-1	114.22	400	1870	30900	144000		2000	WG1599038
Vinyl chloride	75-01-4	62.50	16.0	40.9	ND	ND		80	WG1598004
Vinyl Bromide	593-60-2	106.95	16.0	70.0	ND	ND		80	WG1598004
Vinyl acetate	108-05-4	86.10	16.0	56.3	ND	ND		80	WG1598004
m&p-Xylene	1330-20-7	106	800	3470	18100	78500		2000	WG1599038
o-Xylene	95-47-6	106	16.0	69.4	1040	4510		80	WG1598004
TPH (GC/MS) Low Fraction	8006-61-9	101	400000	1650000	1020000	4210000		2000	WG1599038
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*108*				WG1598004
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*89.7*				WG1599038

Method Blank (MB)

(MB) R3607571-3 12/28/20 10:43

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.584	1.25
Allyl Chloride	U		0.114	0.200
Benzyl Chloride	0.0846	J	0.0598	0.200
Bromodichloromethane	U		0.0702	0.200
Bromoform	U		0.0732	0.600
Bromomethane	U		0.0982	0.200
1,3-Butadiene	U		0.104	2.00
Carbon disulfide	U		0.102	0.200
Carbon tetrachloride	U		0.0732	0.200
Chlorobenzene	U		0.0832	0.200
Chloroethane	U		0.0996	0.200
Chloroform	U		0.0717	0.200
Chloromethane	U		0.103	0.200
2-Chlorotoluene	U		0.0828	0.200
Dibromochloromethane	U		0.0727	0.200
1,2-Dibromoethane	U		0.0721	0.200
1,2-Dichlorobenzene	U		0.128	0.200
1,3-Dichlorobenzene	U		0.182	0.200
1,4-Dichlorobenzene	0.0582	J	0.0557	0.200
1,2-Dichloroethane	U		0.0700	0.200
1,1-Dichloroethane	U		0.0723	0.200
1,1-Dichloroethene	U		0.0762	0.200
cis-1,2-Dichloroethene	U		0.0784	0.200
trans-1,2-Dichloroethene	U		0.0673	0.200
1,2-Dichloropropane	U		0.0760	0.200
cis-1,3-Dichloropropene	U		0.0689	0.200
trans-1,3-Dichloropropene	U		0.0728	0.200
1,4-Dioxane	U		0.0833	0.200
4-Ethyltoluene	U		0.0783	0.200
Trichlorofluoromethane	U		0.0819	0.200
Dichlorodifluoromethane	U		0.137	0.200
1,1,2-Trichlorotrifluoroethane	U		0.0793	0.200
1,2-Dichlorotetrafluoroethane	U		0.0890	0.200
Hexachloro-1,3-butadiene	U		0.105	0.630
Isopropylbenzene	U		0.0777	0.200
Methylene Chloride	U		0.0979	0.200
Methyl Butyl Ketone	U		0.133	1.25
2-Butanone (MEK)	U		0.0814	1.25
4-Methyl-2-pentanone (MIBK)	U		0.0765	1.25
Methyl Methacrylate	U		0.0876	0.200

Method Blank (MB)

(MB) R3607571-3 12/28/20 10:43

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
MTBE	U		0.0647	0.200
Naphthalene	U		0.350	0.630
2-Propanol	U		0.264	1.25
Propene	0.156	J	0.0932	0.400
Styrene	U		0.0788	0.200
1,1,2,2-Tetrachloroethane	U		0.0743	0.200
Tetrachloroethylene	U		0.0814	0.200
Tetrahydrofuran	U		0.0734	0.200
Toluene	U		0.0870	0.500
1,2,4-Trichlorobenzene	0.171	J	0.148	0.630
1,1,1-Trichloroethane	U		0.0736	0.200
1,1,2-Trichloroethane	U		0.0775	0.200
Trichloroethylene	U		0.0680	0.200
1,2,4-Trimethylbenzene	U		0.0764	0.200
1,3,5-Trimethylbenzene	U		0.0779	0.200
Vinyl chloride	U		0.0949	0.200
Vinyl Bromide	U		0.0852	0.200
Vinyl acetate	U		0.116	0.200
o-Xylene	U		0.0828	0.200
Ethanol	U		0.265	0.630
(S) 1,4-Bromofluorobenzene	*98.6*			*60.0-140*

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

(LCS) R3607571-1 12/28/20 09:27 • (LCSD) R3607571-2 12/28/20 10:06

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethanol	3.75	4.41	3.52	118	93.9	55.0-148			22.4	25
Propene	3.75	3.55	3.56	94.7	94.9	64.0-144			0.281	25
Dichlorodifluoromethane	3.75	4.03	4.21	107	112	64.0-139			4.37	25
1,2-Dichlorotetrafluoroethane	3.75	4.04	4.21	108	112	70.0-130			4.12	25
Chloromethane	3.75	3.95	4.05	105	108	70.0-130			2.50	25
Vinyl chloride	3.75	4.07	4.27	109	114	70.0-130			4.80	25
1,3-Butadiene	3.75	3.94	3.97	105	106	70.0-130			0.759	25
Bromomethane	3.75	4.23	3.96	113	106	70.0-130			6.59	25
Chloroethane	3.75	4.38	4.12	117	110	70.0-130			6.12	25
Trichlorofluoromethane	3.75	4.34	4.05	116	108	70.0-130			6.91	25
1,1,2-Trichlorotrifluoroethane	3.75	4.20	4.28	112	114	70.0-130			1.89	25
1,1-Dichloroethene	3.75	4.03	4.12	107	110	70.0-130			2.21	25

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

(LCS) R3607571-1 12/28/20 09:27 • (LCSD) R3607571-2 12/28/20 10:06

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,1-Dichloroethane	3.75	4.08	4.09	109	109	70.0-130			0.245	25
Acetone	3.75	3.76	3.80	100	101	70.0-130			1.06	25
2-Propanol	3.75	3.87	3.86	103	103	70.0-139			0.259	25
Carbon disulfide	3.75	3.97	4.11	106	110	70.0-130			3.47	25
Methylene Chloride	3.75	3.84	3.99	102	106	70.0-130			3.83	25
MTBE	3.75	3.90	3.91	104	104	70.0-130			0.256	25
trans-1,2-Dichloroethene	3.75	4.01	4.11	107	110	70.0-130			2.46	25
Vinyl acetate	3.75	3.25	2.86	86.7	76.3	70.0-130			12.8	25
Methyl Ethyl Ketone	3.75	3.95	3.93	105	105	70.0-130			0.508	25
cis-1,2-Dichloroethene	3.75	3.58	3.64	95.5	97.1	70.0-130			1.66	25
Chloroform	3.75	4.07	4.12	109	110	70.0-130			1.22	25
1,1,1-Trichloroethane	3.75	4.11	4.15	110	111	70.0-130			0.969	25
Carbon tetrachloride	3.75	4.01	4.11	107	110	70.0-130			2.46	25
1,2-Dichloroethane	3.75	4.09	4.20	109	112	70.0-130			2.65	25
Trichloroethylene	3.75	4.16	4.10	111	109	70.0-130			1.45	25
1,2-Dichloropropane	3.75	4.07	4.20	109	112	70.0-130			3.14	25
1,4-Dioxane	3.75	3.88	4.01	103	107	70.0-140			3.30	25
Bromodichloromethane	3.75	4.15	4.18	111	111	70.0-130			0.720	25
cis-1,3-Dichloropropene	3.75	4.13	4.14	110	110	70.0-130			0.242	25
4-Methyl-2-pentanone (MIBK)	3.75	3.99	4.19	106	112	70.0-139			4.89	25
Toluene	3.75	4.20	4.19	112	112	70.0-130			0.238	25
trans-1,3-Dichloropropene	3.75	4.02	4.00	107	107	70.0-130			0.499	25
1,1,2-Trichloroethane	3.75	4.13	4.14	110	110	70.0-130			0.242	25
Tetrachloroethylene	3.75	4.16	4.23	111	113	70.0-130			1.67	25
Methyl Butyl Ketone	3.75	3.98	4.25	106	113	70.0-149			6.56	25
Dibromochloromethane	3.75	4.23	4.18	113	111	70.0-130			1.19	25
1,2-Dibromoethane	3.75	4.17	4.17	111	111	70.0-130			0.000	25
Chlorobenzene	3.75	4.18	4.14	111	110	70.0-130			0.962	25
o-Xylene	3.75	4.02	4.11	107	110	70.0-130			2.21	25
Styrene	3.75	4.23	4.26	113	114	70.0-130			0.707	25
Bromoform	3.75	3.91	4.01	104	107	70.0-130			2.53	25
1,1,2,2-Tetrachloroethane	3.75	3.92	4.05	105	108	70.0-130			3.26	25
4-Ethyltoluene	3.75	4.05	4.19	108	112	70.0-130			3.40	25
1,3,5-Trimethylbenzene	3.75	3.99	4.04	106	108	70.0-130			1.25	25
1,2,4-Trimethylbenzene	3.75	4.07	4.19	109	112	70.0-130			2.91	25
1,3-Dichlorobenzene	3.75	4.05	4.21	108	112	70.0-130			3.87	25
1,4-Dichlorobenzene	3.75	4.13	4.16	110	111	70.0-130			0.724	25
Benzyl Chloride	3.75	3.93	4.03	105	107	70.0-152			2.51	25
1,2-Dichlorobenzene	3.75	4.06	4.17	108	111	70.0-130			2.67	25
1,2,4-Trichlorobenzene	3.75	3.95	4.16	105	111	70.0-160			5.18	25

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

(LCS) R3607571-1 12/28/20 09:27 • (LCSD) R3607571-2 12/28/20 10:06

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hexachloro-1,3-butadiene	3.75	3.91	4.17	104	111	70.0-151			6.44	25
Naphthalene	3.75	3.94	4.13	105	110	70.0-159			4.71	25
Allyl Chloride	3.75	3.95	4.00	105	107	70.0-130			1.26	25
2-Chlorotoluene	3.75	4.03	4.13	107	110	70.0-130			2.45	25
Methyl Methacrylate	3.75	3.97	3.87	106	103	70.0-130			2.55	25
Tetrahydrofuran	3.75	3.97	4.00	106	107	70.0-137			0.753	25
Vinyl Bromide	3.75	4.41	4.13	118	110	70.0-130			6.56	25
Isopropylbenzene	3.75	4.06	4.05	108	108	70.0-130			0.247	25
(S) 1,4-Bromofluorobenzene				*101*	*101*	*60.0-140*				

Method Blank (MB)

(MB) R3608428-3 12/30/20 10:21

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Benzene	U		0.0715	0.200
Cyclohexane	U		0.0753	0.200
Ethylbenzene	U		0.0835	0.200
Heptane	U		0.104	0.200
n-Hexane	U		0.206	0.630
2,2,4-Trimethylpentane	U		0.133	0.200
m&p-Xylene	U		0.135	0.400
TPH (GC/MS) Low Fraction	U		39.7	200
(S) 1,4-Bromofluorobenzene	*91.7*			*60.0-140*

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

(LCS) R3608428-1 12/30/20 08:56 • (LCSD) R3608428-2 12/30/20 09:39

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
n-Hexane	3.75	4.04	4.12	108	110	70.0-130			1.96	25
Cyclohexane	3.75	4.00	4.07	107	109	70.0-130			1.73	25
Benzene	3.75	4.05	4.11	108	110	70.0-130			1.47	25
Heptane	3.75	3.51	3.61	93.6	96.3	70.0-130			2.81	25
Ethylbenzene	3.75	3.97	4.00	106	107	70.0-130			0.753	25
m&p-Xylene	7.50	8.27	8.35	110	111	70.0-130			0.963	25
TPH (GC/MS) Low Fraction	203	260	263	128	130	70.0-130			1.15	25
2,2,4-Trimethylpentane	3.75	4.01	4.06	107	108	70.0-130			1.24	25
(S) 1,4-Bromofluorobenzene				*95.7*	*95.0*	*60.0-140*				

Guide to Reading and Understanding Your Laboratory Report

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

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

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
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
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.

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

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	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	LAO00356
Kentucky [1 6]	KY90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-20-18
Maine	TN00003	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	998093910
Montana	CERT0086	Wyoming	A2LA

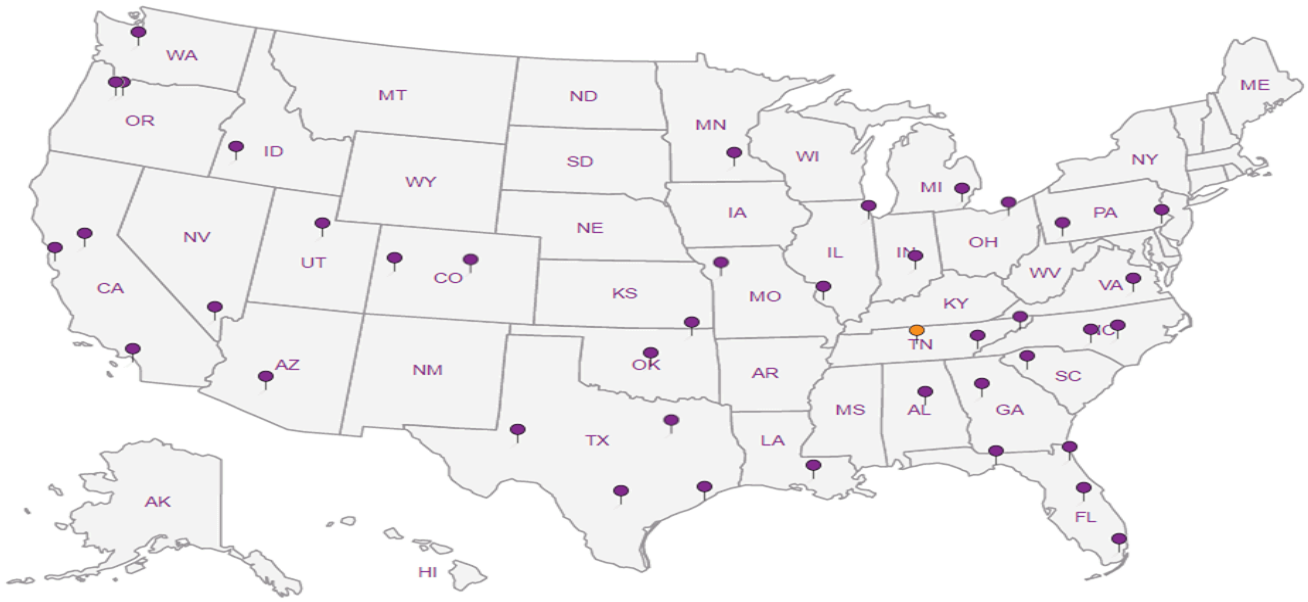
Third Party Federal Accreditations

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.



CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: GeoDesign Inc. - Wilsonville, OR	Billing Information: Accounts Payable, 9450 SW Commerce Circle Suite 300, Willsonville, OR 97070
Address: 9450 SW Commerce Circle, Suite 300, Wilsonville, OR	
Report To: Kyle Haggart	Email To: khaggart@geodesigninc.com
Copy To:	Site Collection Info/Address: 70 W Marine Drive, Astoria, OR
Customer Project Name/Number: BigBeams-1-04	State: OR / County/City: Astoria / Time Zone Collected: [✓] PT [ ] MT [ ] CT [ ] ET
Phone: 5035778288 / Email: khaggart@geodesigninc.com	Site/Facility ID #: / Compliance Monitoring? [ ] Yes [ ] No
Collected By (print): Kris Collier	Purchase Order #: / Quote #: / DW PWS ID #: / DW Location Code:
Collected By (signature):	Turnaround Date Required: / Immediately Packed on Ice: [ ] Yes [✓] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: ____ [ ] Hold: ____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply) / Field Filtered (if applicable): [ ] Yes [ ] No / Analysis: ____

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other ____

Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Analyses: TO-15	Lab Profile/Line
PRE (122020)	Air		12/20/20	13:27	12/20/20	13:32		1	X	L1299101 -01

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	(NA)
Custody Signatures Present	Y	N	(NA)
Collector Signature Present	(Y)	N	NA
Bottles Intact	(Y)	N	NA
Correct Bottles	(Y)	N	NA
Sufficient Volume	(Y)	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips: ____			
Sample pH Acceptable	Y	N	NA
pH Strips: ____			
Sulfide Present	Y	N	NA
Lead Acetate Strips: ____			

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 138248151504

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N (NA)
Therm ID#: ____
Cooler 1 Temp Upon Receipt: ____oC
Cooler 1 Therm Corr. Factor: ____oC
Cooler 1 Corrected Temp: ____oC
Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	MTJL LAB USE ONLY
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Table #: M079 / Acctnu: / Template: / Prelogin: / PM: / PB:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature) Josh Dennisky	Date/Time: 12/29/20 9:30	

Trip Blank Received: Y N (NA)
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: ____ of: ____

ANALYTICAL REPORT

January 06, 2021

GeoDesign Inc. - Wilsonville, OR

Sample Delivery Group:	L1301244
Samples Received:	12/29/2020
Project Number:	BigBeams-1-04
Description:	BigBeams-1-04

Report To: Kyle Haggart
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Entire Report Reviewed By:

Brian Ford
Project Manager

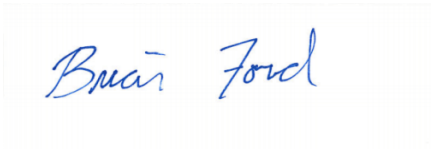
TABLE OF CONTENTS

PRE(122720) L1301244-01 Air

Collected by: Kris Collier
Collected date/time: 12/27/20 17:22
Received date/time: 12/29/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1600261	80	01/03/21 20:42	01/03/21 20:42	MBF	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG1600497	400	01/05/21 01:19	01/05/21 01:19	MBF	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

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	100	238	154	366		80	WG1600261
Allyl chloride	107-05-1	76.53	16.0	50.1	ND	ND		80	WG1600261
Benzene	71-43-2	78.10	16.0	51.1	4180	13400		80	WG1600261
Benzyl Chloride	100-44-7	127	16.0	83.1	ND	ND		80	WG1600261
Bromodichloromethane	75-27-4	164	16.0	107	ND	ND		80	WG1600261
Bromoform	75-25-2	253	48.0	497	ND	ND		80	WG1600261
Bromomethane	74-83-9	94.90	16.0	62.1	ND	ND		80	WG1600261
1,3-Butadiene	106-99-0	54.10	160	354	ND	ND		80	WG1600261
Carbon disulfide	75-15-0	76.10	16.0	49.8	ND	ND		80	WG1600261
Carbon tetrachloride	56-23-5	154	16.0	101	ND	ND		80	WG1600261
Chlorobenzene	108-90-7	113	16.0	73.9	ND	ND		80	WG1600261
Chloroethane	75-00-3	64.50	16.0	42.2	ND	ND	J4	80	WG1600261
Chloroform	67-66-3	119	16.0	77.9	ND	ND		80	WG1600261
Chloromethane	74-87-3	50.50	16.0	33.0	ND	ND		80	WG1600261
2-Chlorotoluene	95-49-8	126	16.0	82.5	ND	ND		80	WG1600261
Cyclohexane	110-82-7	84.20	16.0	55.1	5200	17900		80	WG1600261
Dibromochloromethane	124-48-1	208	16.0	136	ND	ND		80	WG1600261
1,2-Dibromoethane	106-93-4	188	16.0	123	ND	ND		80	WG1600261
1,2-Dichlorobenzene	95-50-1	147	16.0	96.2	ND	ND		80	WG1600261
1,3-Dichlorobenzene	541-73-1	147	16.0	96.2	ND	ND		80	WG1600261
1,4-Dichlorobenzene	106-46-7	147	16.0	96.2	ND	ND		80	WG1600261
1,2-Dichloroethane	107-06-2	99	16.0	64.8	ND	ND		80	WG1600261
1,1-Dichloroethane	75-34-3	98	16.0	64.1	ND	ND		80	WG1600261
1,1-Dichloroethene	75-35-4	96.90	16.0	63.4	ND	ND		80	WG1600261
cis-1,2-Dichloroethene	156-59-2	96.90	16.0	63.4	ND	ND		80	WG1600261
trans-1,2-Dichloroethene	156-60-5	96.90	16.0	63.4	ND	ND		80	WG1600261
1,2-Dichloropropane	78-87-5	113	16.0	73.9	ND	ND		80	WG1600261
cis-1,3-Dichloropropene	10061-01-5	111	16.0	72.6	ND	ND		80	WG1600261
trans-1,3-Dichloropropene	10061-02-6	111	16.0	72.6	ND	ND		80	WG1600261
1,4-Dioxane	123-91-1	88.10	16.0	57.7	ND	ND		80	WG1600261
Ethanol	64-17-5	46.10	50.4	95.0	179	338		80	WG1600261
Ethylbenzene	100-41-4	106	16.0	69.4	7000	30300		80	WG1600261
4-Ethyltoluene	622-96-8	120	16.0	78.5	2130	10500		80	WG1600261
Trichlorofluoromethane	75-69-4	137.40	16.0	89.9	ND	ND		80	WG1600261
Dichlorodifluoromethane	75-71-8	120.92	16.0	79.1	ND	ND		80	WG1600261
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	16.0	123	ND	ND		80	WG1600261
1,2-Dichlorotetrafluoroethane	76-14-2	171	16.0	112	ND	ND		80	WG1600261
Heptane	142-82-5	100	80.0	327	14800	60500		400	WG1600497
Hexachloro-1,3-butadiene	87-68-3	261	50.4	538	ND	ND		80	WG1600261
n-Hexane	110-54-3	86.20	252	888	22100	77900		400	WG1600497
Isopropylbenzene	98-82-8	120.20	16.0	78.7	529	2600		80	WG1600261
Methylene Chloride	75-09-2	84.90	16.0	55.6	ND	ND		80	WG1600261
Methyl Butyl Ketone	591-78-6	100	100	409	ND	ND		80	WG1600261
2-Butanone (MEK)	78-93-3	72.10	100	295	ND	ND		80	WG1600261
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	100	409	ND	ND		80	WG1600261
Methyl methacrylate	80-62-6	100.12	16.0	65.5	ND	ND		80	WG1600261
MTBE	1634-04-4	88.10	16.0	57.7	ND	ND		80	WG1600261
Naphthalene	91-20-3	128	50.4	264	ND	ND		80	WG1600261
2-Propanol	67-63-0	60.10	100	246	429	1050		80	WG1600261
Propene	115-07-1	42.10	32.0	55.1	32.4	55.8	B	80	WG1600261
Styrene	100-42-5	104	16.0	68.1	ND	ND		80	WG1600261
1,1,2,2-Tetrachloroethane	79-34-5	168	16.0	110	ND	ND		80	WG1600261
Tetrachloroethylene	127-18-4	166	16.0	109	ND	ND		80	WG1600261
Tetrahydrofuran	109-99-9	72.10	16.0	47.2	ND	ND		80	WG1600261
Toluene	108-88-3	92.10	40.0	151	196	738		80	WG1600261
1,2,4-Trichlorobenzene	120-82-1	181	50.4	373	ND	ND		80	WG1600261

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	16.0	87.0	ND	ND		80	WG1600261
1,1,2-Trichloroethane	79-00-5	133	16.0	87.0	ND	ND		80	WG1600261
Trichloroethylene	79-01-6	131	16.0	85.7	ND	ND		80	WG1600261
1,2,4-Trimethylbenzene	95-63-6	120	16.0	78.5	3800	18700		80	WG1600261
1,3,5-Trimethylbenzene	108-67-8	120	16.0	78.5	1140	5600		80	WG1600261
2,2,4-Trimethylpentane	540-84-1	114.22	80.0	374	15400	71900		400	WG1600497
Vinyl chloride	75-01-4	62.50	16.0	40.9	ND	ND		80	WG1600261
Vinyl Bromide	593-60-2	106.95	16.0	70.0	ND	ND		80	WG1600261
Vinyl acetate	108-05-4	86.10	16.0	56.3	ND	ND		80	WG1600261
m&p-Xylene	1330-20-7	106	32.0	139	7810	33900		80	WG1600261
o-Xylene	95-47-6	106	16.0	69.4	661	2870		80	WG1600261
TPH (GC/MS) Low Fraction	8006-61-9	101	16000	66100	400000	1650000		80	WG1600261
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*106*				WG1600261
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*89.9*				WG1600497

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

Method Blank (MB)

(MB) R3609147-3 01/03/21 11:16

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.584	1.25
Allyl Chloride	U		0.114	0.200
Benzene	U		0.0715	0.200
Benzyl Chloride	U		0.0598	0.200
Bromodichloromethane	U		0.0702	0.200
Bromoform	U		0.0732	0.600
Bromomethane	U		0.0982	0.200
1,3-Butadiene	U		0.104	2.00
Carbon disulfide	U		0.102	0.200
Carbon tetrachloride	U		0.0732	0.200
Chlorobenzene	U		0.0832	0.200
Chloroethane	U		0.0996	0.200
Chloroform	U		0.0717	0.200
Chloromethane	U		0.103	0.200
2-Chlorotoluene	U		0.0828	0.200
Cyclohexane	U		0.0753	0.200
Dibromochloromethane	U		0.0727	0.200
1,2-Dibromoethane	U		0.0721	0.200
1,2-Dichlorobenzene	U		0.128	0.200
1,3-Dichlorobenzene	U		0.182	0.200
1,4-Dichlorobenzene	0.107	J	0.0557	0.200
1,2-Dichloroethane	U		0.0700	0.200
1,1-Dichloroethane	U		0.0723	0.200
1,1-Dichloroethene	U		0.0762	0.200
cis-1,2-Dichloroethene	U		0.0784	0.200
trans-1,2-Dichloroethene	U		0.0673	0.200
1,2-Dichloropropane	U		0.0760	0.200
cis-1,3-Dichloropropene	U		0.0689	0.200
trans-1,3-Dichloropropene	U		0.0728	0.200
1,4-Dioxane	U		0.0833	0.200
Ethylbenzene	U		0.0835	0.200
4-Ethyltoluene	U		0.0783	0.200
Trichlorofluoromethane	U		0.0819	0.200
Dichlorodifluoromethane	U		0.137	0.200
1,1,2-Trichlorotrifluoroethane	U		0.0793	0.200
1,2-Dichlorotetrafluoroethane	U		0.0890	0.200
Hexachloro-1,3-butadiene	U		0.105	0.630
Isopropylbenzene	U		0.0777	0.200
Methylene Chloride	U		0.0979	0.200
Methyl Butyl Ketone	U		0.133	1.25

Method Blank (MB)

(MB) R3609147-3 01/03/21 11:16

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
2-Butanone (MEK)	U		0.0814	1.25
4-Methyl-2-pentanone (MIBK)	U		0.0765	1.25
Methyl Methacrylate	U		0.0876	0.200
MTBE	U		0.0647	0.200
Naphthalene	U		0.350	0.630
2-Propanol	U		0.264	1.25
Propene	0.152	J	0.0932	0.400
Styrene	U		0.0788	0.200
1,1,2,2-Tetrachloroethane	U		0.0743	0.200
Tetrachloroethylene	U		0.0814	0.200
Tetrahydrofuran	U		0.0734	0.200
Toluene	U		0.0870	0.500
1,2,4-Trichlorobenzene	U		0.148	0.630
1,1,1-Trichloroethane	U		0.0736	0.200
1,1,2-Trichloroethane	U		0.0775	0.200
Trichloroethylene	U		0.0680	0.200
1,2,4-Trimethylbenzene	U		0.0764	0.200
1,3,5-Trimethylbenzene	U		0.0779	0.200
Vinyl chloride	U		0.0949	0.200
Vinyl Bromide	U		0.0852	0.200
Vinyl acetate	U		0.116	0.200
m&p-Xylene	U		0.135	0.400
o-Xylene	U		0.0828	0.200
Ethanol	U		0.265	0.630
TPH (GC/MS) Low Fraction	U		39.7	200
(S) 1,4-Bromofluorobenzene	*86.6*			*60.0-140*

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

(LCS) R3609147-1 01/03/21 09:50 • (LCSD) R3609147-2 01/03/21 10:34

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethanol	3.75	3.24	3.22	86.4	85.9	55.0-148			0.619	25
Propene	3.75	3.75	3.81	100	102	64.0-144			1.59	25
Dichlorodifluoromethane	3.75	4.10	4.08	109	109	64.0-139			0.489	25
1,2-Dichlorotetrafluoroethane	3.75	4.21	4.19	112	112	70.0-130			0.476	25
Chloromethane	3.75	4.00	3.99	107	106	70.0-130			0.250	25
Vinyl chloride	3.75	3.83	3.83	102	102	70.0-130			0.000	25
1,3-Butadiene	3.75	3.64	3.59	97.1	95.7	70.0-130			1.38	25

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

(LCS) R3609147-1 01/03/21 09:50 • (LCSD) R3609147-2 01/03/21 10:34

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromomethane	3.75	3.23	2.93	86.1	78.1	70.0-130			9.74	25
Chloroethane	3.75	3.05	2.59	81.3	69.1	70.0-130		J4	16.3	25
Trichlorofluoromethane	3.75	3.75	3.64	100	97.1	70.0-130			2.98	25
1,1,2-Trichlorotrifluoroethane	3.75	4.08	4.07	109	109	70.0-130			0.245	25
1,1-Dichloroethene	3.75	4.03	3.95	107	105	70.0-130			2.01	25
1,1-Dichloroethane	3.75	4.14	4.13	110	110	70.0-130			0.242	25
Acetone	3.75	3.93	3.93	105	105	70.0-130			0.000	25
2-Propanol	3.75	3.92	3.87	105	103	70.0-139			1.28	25
Carbon disulfide	3.75	4.36	4.25	116	113	70.0-130			2.56	25
Methylene Chloride	3.75	3.87	3.84	103	102	70.0-130			0.778	25
MTBE	3.75	4.04	4.00	108	107	70.0-130			0.995	25
trans-1,2-Dichloroethene	3.75	4.13	4.11	110	110	70.0-130			0.485	25
Vinyl acetate	3.75	3.85	4.11	103	110	70.0-130			6.53	25
Methyl Ethyl Ketone	3.75	4.14	3.95	110	105	70.0-130			4.70	25
cis-1,2-Dichloroethene	3.75	4.04	4.03	108	107	70.0-130			0.248	25
Chloroform	3.75	4.17	4.18	111	111	70.0-130			0.240	25
Cyclohexane	3.75	4.22	4.28	113	114	70.0-130			1.41	25
1,1,1-Trichloroethane	3.75	4.22	4.17	113	111	70.0-130			1.19	25
Carbon tetrachloride	3.75	4.36	4.29	116	114	70.0-130			1.62	25
Benzene	3.75	4.28	4.37	114	117	70.0-130			2.08	25
1,2-Dichloroethane	3.75	4.27	4.35	114	116	70.0-130			1.86	25
Trichloroethylene	3.75	4.29	4.28	114	114	70.0-130			0.233	25
1,2-Dichloropropane	3.75	4.22	4.38	113	117	70.0-130			3.72	25
1,4-Dioxane	3.75	4.24	4.23	113	113	70.0-140			0.236	25
Bromodichloromethane	3.75	4.25	4.30	113	115	70.0-130			1.17	25
cis-1,3-Dichloropropene	3.75	4.25	4.33	113	115	70.0-130			1.86	25
4-Methyl-2-pentanone (MIBK)	3.75	4.15	4.25	111	113	70.0-139			2.38	25
Toluene	3.75	4.27	4.32	114	115	70.0-130			1.16	25
trans-1,3-Dichloropropene	3.75	4.25	4.27	113	114	70.0-130			0.469	25
1,1,2-Trichloroethane	3.75	4.30	4.37	115	117	70.0-130			1.61	25
Tetrachloroethylene	3.75	4.44	4.50	118	120	70.0-130			1.34	25
Methyl Butyl Ketone	3.75	4.23	4.33	113	115	70.0-149			2.34	25
Dibromochloromethane	3.75	4.45	4.49	119	120	70.0-130			0.895	25
1,2-Dibromoethane	3.75	4.40	4.41	117	118	70.0-130			0.227	25
Chlorobenzene	3.75	4.50	4.59	120	122	70.0-130			1.98	25
Ethylbenzene	3.75	4.22	4.18	113	111	70.0-130			0.952	25
m&p-Xylene	7.50	8.55	8.55	114	114	70.0-130			0.000	25
o-Xylene	3.75	4.20	4.20	112	112	70.0-130			0.000	25
Styrene	3.75	4.29	4.37	114	117	70.0-130			1.85	25
Bromoform	3.75	4.26	4.23	114	113	70.0-130			0.707	25

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

(LCS) R3609147-1 01/03/21 09:50 • (LCSD) R3609147-2 01/03/21 10:34

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,1,2,2-Tetrachloroethane	3.75	4.24	4.25	113	113	70.0-130			0.236	25
4-Ethyltoluene	3.75	4.58	4.46	122	119	70.0-130			2.65	25
1,3,5-Trimethylbenzene	3.75	4.41	4.38	118	117	70.0-130			0.683	25
1,2,4-Trimethylbenzene	3.75	4.25	4.21	113	112	70.0-130			0.946	25
1,3-Dichlorobenzene	3.75	4.66	4.66	124	124	70.0-130			0.000	25
1,4-Dichlorobenzene	3.75	4.77	4.70	127	125	70.0-130			1.48	25
Benzyl Chloride	3.75	3.67	3.67	97.9	97.9	70.0-152			0.000	25
1,2-Dichlorobenzene	3.75	4.83	4.80	129	128	70.0-130			0.623	25
1,2,4-Trichlorobenzene	3.75	4.23	4.15	113	111	70.0-160			1.91	25
Hexachloro-1,3-butadiene	3.75	4.44	4.37	118	117	70.0-151			1.59	25
Naphthalene	3.75	4.19	4.17	112	111	70.0-159			0.478	25
TPH (GC/MS) Low Fraction	203	257	257	127	127	70.0-130			0.000	25
Allyl Chloride	3.75	3.63	4.53	96.8	121	70.0-130			22.1	25
2-Chlorotoluene	3.75	4.43	4.42	118	118	70.0-130			0.226	25
Methyl Methacrylate	3.75	4.29	4.38	114	117	70.0-130			2.08	25
Tetrahydrofuran	3.75	4.09	4.07	109	109	70.0-137			0.490	25
Vinyl Bromide	3.75	3.43	3.22	91.5	85.9	70.0-130			6.32	25
Isopropylbenzene	3.75	4.37	4.36	117	116	70.0-130			0.229	25
(S) 1,4-Bromofluorobenzene				*95.4*	*94.6*	*60.0-140*				

Method Blank (MB)

(MB) R3609434-3 01/04/21 11:00

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Heptane	U		0.104	0.200
n-Hexane	U		0.206	0.630
2,2,4-Trimethylpentane	U		0.133	0.200
(S) 1,4-Bromofluorobenzene	*84.7*			*60.0-140*

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

(LCS) R3609434-1 01/04/21 09:34 • (LCSD) R3609434-2 01/04/21 10:18

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
n-Hexane	3.75	3.98	4.12	106	110	70.0-130			3.46	25
Heptane	3.75	3.57	3.64	95.2	97.1	70.0-130			1.94	25
2,2,4-Trimethylpentane	3.75	4.08	4.08	109	109	70.0-130			0.000	25
(S) 1,4-Bromofluorobenzene				*91.6*	*92.3*	*60.0-140*				

Guide to Reading and Understanding Your Laboratory Report

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

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

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
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
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.

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	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	LAO00356
Kentucky [1 6]	KY90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-20-18
Maine	TN00003	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	998093910
Montana	CERT0086	Wyoming	A2LA

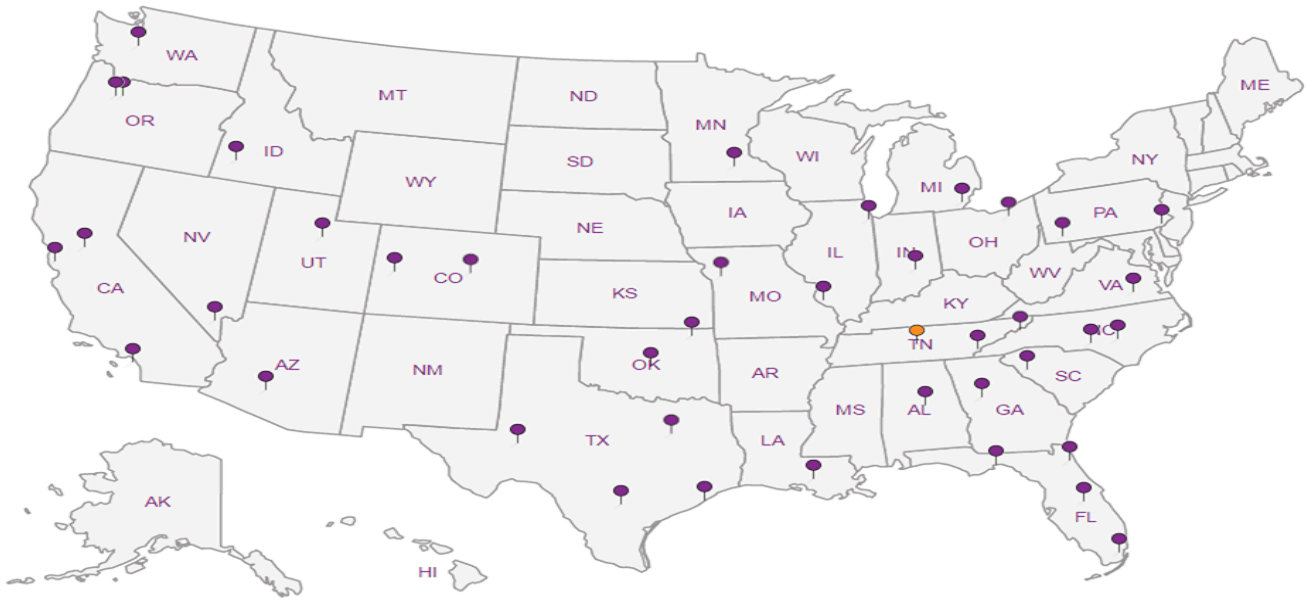
Third Party Federal Accreditations

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.



CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: GeoDesign Inc. - Wilsonville, OR	Billing Information: Accounts Payable, 9450 SW Commerce Circle Suite 300, Willsonville, OR 97070
Address: 9450 SW Commerce Circle, Suite 300 Wilsonville, OR	
Report To: Kyle Haggart	Email To: khaggart@geodesigninc.com
Copy To:	Site Collection Info/Address: 70 W Marine Drive, Astoria, OR
Customer Project Name/Number: BigBeams-1-04	State: OR County/City: Astoria Time Zone Collected: [✓] PT [ ] MT [ ] CT [ ] ET
Phone: 5035778288 Email: khaggart@geodesigninc.com	Site/Facility ID #: Compliance Monitoring? [ ] Yes [ ] No
Collected By (print): Kris Collier	Purchase Order #: Quote #: DW PWS ID #: DW Location Code:
Collected By (signature):	Turnaround Date Required: Immediately Packed on Ice: [ ] Yes [✓] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: _____ [ ] Hold: _____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply)
	Field Filtered (if applicable): [ ] Yes [ ] No Analysis: _____

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Analyses: TO-15	Lab Sample # / Comments
PRE (122720)	Air		12/27/20	17:17	12/27/20	17:22		1	X	L1301244-01

Container Preservative Type **

Lab Project Manager:

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	(NA)
Custody Signatures Present	Y	N	(NA)
Collector Signature Present	(Y)	N	NA
Bottles Intact	(Y)	N	NA
Correct Bottles	(Y)	N	NA
Sufficient Volume	(Y)	N	NA
Samples Received on Ice	Y	N	(NA)
VOA - Headspace Acceptable	Y	N	(NA)
USDA Regulated Soils	Y	N	(NA)
Samples in Holding Time	(Y)	N	NA
Residual Chlorine Present	Y	N	NA
Sample pH Acceptable	Y	N	NA
Sulfide Present	Y	N	NA

Cl Strips: _____

pH Strips: _____

Lead Acetate Strips: _____

LAB USE ONLY:

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 141117522786

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: Y N (NA)

Therm ID#: _____

Cooler 1 Temp Upon Receipt: 4MB oC

Cooler 1 Therm Corr. Factor: _____ oC

Cooler 1 Corrected Temp: _____ oC

Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
	12/27/20		
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
		Josh Grzeszkiewicz	12/29/20 9:00

MTJL LAB USE ONLY

Table

Acctnu.

Template: M217

Prelogin:

PM:

PB:

Trip Blank Received: Y (N) NA

HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

January 26, 2021

Revised Report

NV5 - Wilsonville, OR

Sample Delivery Group:	L1307895
Samples Received:	01/19/2021
Project Number:	BIG BEAMS-1-04
Description:	

Report To: Kyle Haggart
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Entire Report Reviewed By:

Kelly Mercer
Project Manager

TABLE OF CONTENTS

POST(011521) L1307895-01 Air

Collected by: Tim Hainley
Collected date/time: 01/15/21 12:44
Received date/time: 01/19/21 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1607810	1	01/19/21 18:46	01/19/21 18:46	CAW	Mt. Juliet, TN

PRE(011521) L1307895-02 Air

Collected by: Tim Hainley
Collected date/time: 01/15/21 13:05
Received date/time: 01/19/21 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1607810	1	01/19/21 19:33	01/19/21 19:33	CAW	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG1608551	50	01/20/21 17:34	01/20/21 17:34	CAW	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.

Kelly Mercer
Project Manager

Report Revision History

Level II Report - Version 1: 01/21/21 18:30

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	1.25	2.97	4.85	11.5		1	WG1607810
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1607810
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG1607810
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1607810
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1607810
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1607810
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1607810
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1607810
Carbon disulfide	75-15-0	76.10	0.200	0.622	0.522	1.62		1	WG1607810
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1607810
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1607810
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1607810
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG1607810
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1607810
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1607810
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG1607810
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1607810
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1607810
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1607810
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG1607810
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1607810
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1607810
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1607810
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1607810
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1607810
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1607810
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1607810
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1607810
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1607810
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1607810
Ethanol	64-17-5	46.10	0.630	1.19	ND	ND		1	WG1607810
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG1607810
4-Ethyltoluene	622-96-8	120	0.200	0.982	0.337	1.65		1	WG1607810
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	ND	ND		1	WG1607810
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	ND	ND		1	WG1607810
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1607810
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1607810
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG1607810
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1607810
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG1607810
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1607810
Methylene Chloride	75-09-2	84.90	0.200	0.694	2.06	7.15		1	WG1607810
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1607810
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1607810
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1607810
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1607810
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG1607810
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1607810
2-Propanol	67-63-0	60.10	1.25	3.07	ND	ND		1	WG1607810
Propene	115-07-1	42.10	0.400	0.689	ND	ND		1	WG1607810
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1607810
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1607810
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG1607810
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG1607810
Toluene	108-88-3	92.10	0.500	1.88	0.890	3.35		1	WG1607810
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1607810

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	0.200	1.09	ND	ND		1	WG1607810
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1607810
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1607810
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	0.387	1.90		1	WG1607810
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG1607810
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG1607810
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1607810
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1607810
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1607810
m&p-Xylene	1330-20-7	106	0.400	1.73	0.660	2.86		1	WG1607810
o-Xylene	95-47-6	106	0.200	0.867	0.321	1.39		1	WG1607810
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	206	851		1	WG1607810
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*102*				WG1607810

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	1.25	2.97	13.0	30.9		1	WG1607810
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1607810
Benzene	71-43-2	78.10	10.0	31.9	825	2640		50	WG1608551
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1607810
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1607810
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1607810
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1607810
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1607810
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG1607810
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1607810
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1607810
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1607810
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG1607810
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1607810
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1607810
Cyclohexane	110-82-7	84.20	10.0	34.4	2000	6890		50	WG1608551
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1607810
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1607810
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1607810
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG1607810
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1607810
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1607810
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1607810
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1607810
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1607810
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1607810
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1607810
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1607810
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1607810
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1607810
Ethanol	64-17-5	46.10	0.630	1.19	19.4	36.6		1	WG1607810
Ethylbenzene	100-41-4	106	10.0	43.4	1620	7020		50	WG1608551
4-Ethyltoluene	622-96-8	120	10.0	49.1	391	1920		50	WG1608551
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	0.252	1.42		1	WG1607810
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.513	2.54		1	WG1607810
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1607810
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1607810
Heptane	142-82-5	100	10.0	40.9	3200	13100		50	WG1608551
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1607810
n-Hexane	110-54-3	86.20	31.5	111	4160	14700		50	WG1608551
Isopropylbenzene	98-82-8	120.20	10.0	49.2	98.5	484	J4	50	WG1608551
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG1607810
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1607810
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1607810
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1607810
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1607810
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG1607810
Naphthalene	91-20-3	128	0.630	3.30	30.8	161		1	WG1607810
2-Propanol	67-63-0	60.10	1.25	3.07	7.28	17.9		1	WG1607810
Propene	115-07-1	42.10	0.400	0.689	4.24	7.30		1	WG1607810
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1607810
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1607810
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG1607810
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG1607810
Toluene	108-88-3	92.10	25.0	94.2	85.3	321		50	WG1608551
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1607810

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	0.200	1.09	ND	ND		1	WG1607810
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1607810
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1607810
1,2,4-Trimethylbenzene	95-63-6	120	10.0	49.1	751	3690		50	WG1608551
1,3,5-Trimethylbenzene	108-67-8	120	10.0	49.1	248	1220		50	WG1608551
2,2,4-Trimethylpentane	540-84-1	114.22	10.0	46.7	3590	16800		50	WG1608551
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1607810
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1607810
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1607810
m&p-Xylene	1330-20-7	106	20.0	86.7	2560	11100		50	WG1608551
o-Xylene	95-47-6	106	10.0	43.4	235	1020		50	WG1608551
TPH (GC/MS) Low Fraction	8006-61-9	101	10000	41300	85000	351000		50	WG1608551
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*176*		J1		WG1607810
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*101*				WG1608551

Method Blank (MB)

(MB) R3614005-3 01/19/21 11:06

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.584	1.25
Allyl Chloride	U		0.114	0.200
Benzene	U		0.0715	0.200
Benzyl Chloride	U		0.0598	0.200
Bromodichloromethane	U		0.0702	0.200
Bromoform	U		0.0732	0.600
Bromomethane	U		0.0982	0.200
1,3-Butadiene	U		0.104	2.00
Carbon disulfide	U		0.102	0.200
Carbon tetrachloride	U		0.0732	0.200
Chlorobenzene	U		0.0832	0.200
Chloroethane	U		0.0996	0.200
Chloroform	U		0.0717	0.200
Chloromethane	U		0.103	0.200
2-Chlorotoluene	U		0.0828	0.200
Cyclohexane	U		0.0753	0.200
Dibromochloromethane	U		0.0727	0.200
1,2-Dibromoethane	U		0.0721	0.200
1,2-Dichlorobenzene	U		0.128	0.200
1,3-Dichlorobenzene	U		0.182	0.200
1,4-Dichlorobenzene	U		0.0557	0.200
1,2-Dichloroethane	U		0.0700	0.200
1,1-Dichloroethane	U		0.0723	0.200
1,1-Dichloroethene	U		0.0762	0.200
cis-1,2-Dichloroethene	U		0.0784	0.200
trans-1,2-Dichloroethene	U		0.0673	0.200
1,2-Dichloropropane	U		0.0760	0.200
cis-1,3-Dichloropropene	U		0.0689	0.200
trans-1,3-Dichloropropene	U		0.0728	0.200
1,4-Dioxane	U		0.0833	0.200
Ethylbenzene	U		0.0835	0.200
4-Ethyltoluene	U		0.0783	0.200
Trichlorofluoromethane	U		0.0819	0.200
Dichlorodifluoromethane	U		0.137	0.200
1,1,2-Trichlorotrifluoroethane	U		0.0793	0.200
1,2-Dichlorotetrafluoroethane	U		0.0890	0.200
Heptane	U		0.104	0.200
Hexachloro-1,3-butadiene	U		0.105	0.630
n-Hexane	U		0.206	0.630
Isopropylbenzene	U		0.0777	0.200

Method Blank (MB)

(MB) R3614005-3 01/19/21 11:06

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Methylene Chloride	U		0.0979	0.200
Methyl Butyl Ketone	U		0.133	1.25
2-Butanone (MEK)	U		0.0814	1.25
4-Methyl-2-pentanone (MIBK)	U		0.0765	1.25
Methyl Methacrylate	U		0.0876	0.200
MTBE	U		0.0647	0.200
Naphthalene	U		0.350	0.630
2-Propanol	U		0.264	1.25
Propene	0.214	J	0.0932	0.400
Styrene	U		0.0788	0.200
1,1,2,2-Tetrachloroethane	U		0.0743	0.200
Tetrachloroethylene	U		0.0814	0.200
Tetrahydrofuran	U		0.0734	0.200
Toluene	U		0.0870	0.500
1,2,4-Trichlorobenzene	U		0.148	0.630
1,1,1-Trichloroethane	U		0.0736	0.200
1,1,2-Trichloroethane	U		0.0775	0.200
Trichloroethylene	U		0.0680	0.200
1,2,4-Trimethylbenzene	U		0.0764	0.200
1,3,5-Trimethylbenzene	U		0.0779	0.200
2,2,4-Trimethylpentane	U		0.133	0.200
Vinyl chloride	U		0.0949	0.200
Vinyl Bromide	U		0.0852	0.200
Vinyl acetate	U		0.116	0.200
m&p-Xylene	U		0.135	0.400
o-Xylene	U		0.0828	0.200
Ethanol	U		0.265	0.630
TPH (GC/MS) Low Fraction	U		39.7	200
(S) 1,4-Bromofluorobenzene	*96.7*			*60.0-140*

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

(LCS) R3614005-1 01/19/21 08:59 • (LCSD) R3614005-2 01/19/21 09:40

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethanol	3.75	4.02	4.03	107	107	55.0-148			0.248	25
Propene	3.75	3.96	3.78	106	101	64.0-144			4.65	25
Dichlorodifluoromethane	3.75	4.32	4.34	115	116	64.0-139			0.462	25
1,2-Dichlorotetrafluoroethane	3.75	4.28	4.18	114	111	70.0-130			2.36	25

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

(LCS) R3614005-1 01/19/21 08:59 • (LCSD) R3614005-2 01/19/21 09:40

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloromethane	3.75	4.17	4.05	111	108	70.0-130			2.92	25
Vinyl chloride	3.75	4.21	4.04	112	108	70.0-130			4.12	25
1,3-Butadiene	3.75	4.19	4.03	112	107	70.0-130			3.89	25
Bromomethane	3.75	4.24	3.52	113	93.9	70.0-130			18.6	25
Chloroethane	3.75	4.03	3.80	107	101	70.0-130			5.87	25
Trichlorofluoromethane	3.75	3.89	4.41	104	118	70.0-130			12.5	25
1,1,2-Trichlorotrifluoroethane	3.75	4.40	4.29	117	114	70.0-130			2.53	25
1,1-Dichloroethene	3.75	4.34	4.18	116	111	70.0-130			3.76	25
1,1-Dichloroethane	3.75	4.16	4.14	111	110	70.0-130			0.482	25
Acetone	3.75	3.96	3.91	106	104	70.0-130			1.27	25
2-Propanol	3.75	4.20	4.01	112	107	70.0-139			4.63	25
Carbon disulfide	3.75	4.17	4.00	111	107	70.0-130			4.16	25
Methylene Chloride	3.75	3.81	3.72	102	99.2	70.0-130			2.39	25
MTBE	3.75	4.56	4.43	122	118	70.0-130			2.89	25
trans-1,2-Dichloroethene	3.75	4.19	4.18	112	111	70.0-130			0.239	25
n-Hexane	3.75	4.37	4.30	117	115	70.0-130			1.61	25
Vinyl acetate	3.75	4.21	4.35	112	116	70.0-130			3.27	25
Methyl Ethyl Ketone	3.75	4.42	4.23	118	113	70.0-130			4.39	25
cis-1,2-Dichloroethene	3.75	4.30	4.21	115	112	70.0-130			2.12	25
Chloroform	3.75	4.20	4.18	112	111	70.0-130			0.477	25
Cyclohexane	3.75	4.51	4.46	120	119	70.0-130			1.11	25
1,1,1-Trichloroethane	3.75	4.32	4.24	115	113	70.0-130			1.87	25
Carbon tetrachloride	3.75	4.35	4.29	116	114	70.0-130			1.39	25
Benzene	3.75	4.19	4.11	112	110	70.0-130			1.93	25
1,2-Dichloroethane	3.75	4.20	4.12	112	110	70.0-130			1.92	25
Heptane	3.75	4.36	4.15	116	111	70.0-130			4.94	25
Trichloroethylene	3.75	4.40	4.29	117	114	70.0-130			2.53	25
1,2-Dichloropropane	3.75	4.08	4.00	109	107	70.0-130			1.98	25
1,4-Dioxane	3.75	4.61	4.48	123	119	70.0-140			2.86	25
Bromodichloromethane	3.75	4.22	4.14	113	110	70.0-130			1.91	25
cis-1,3-Dichloropropene	3.75	4.44	4.39	118	117	70.0-130			1.13	25
4-Methyl-2-pentanone (MIBK)	3.75	4.32	4.26	115	114	70.0-139			1.40	25
Toluene	3.75	4.52	4.39	121	117	70.0-130			2.92	25
trans-1,3-Dichloropropene	3.75	4.53	4.31	121	115	70.0-130			4.98	25
1,1,2-Trichloroethane	3.75	4.41	4.15	118	111	70.0-130			6.07	25
Tetrachloroethylene	3.75	4.55	4.45	121	119	70.0-130			2.22	25
Methyl Butyl Ketone	3.75	4.46	4.30	119	115	70.0-149			3.65	25
Dibromochloromethane	3.75	4.33	4.19	115	112	70.0-130			3.29	25
1,2-Dibromoethane	3.75	4.50	4.38	120	117	70.0-130			2.70	25
Chlorobenzene	3.75	4.37	4.26	117	114	70.0-130			2.55	25

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

(LCS) R3614005-1 01/19/21 08:59 • (LCSD) R3614005-2 01/19/21 09:40

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethylbenzene	3.75	4.29	4.22	114	113	70.0-130			1.65	25
m&p-Xylene	7.50	9.00	8.94	120	119	70.0-130			0.669	25
o-Xylene	3.75	4.50	4.42	120	118	70.0-130			1.79	25
Styrene	3.75	4.69	4.70	125	125	70.0-130			0.213	25
Bromoform	3.75	4.20	4.25	112	113	70.0-130			1.18	25
1,1,2,2-Tetrachloroethane	3.75	4.07	4.08	109	109	70.0-130			0.245	25
4-Ethyltoluene	3.75	4.63	4.47	123	119	70.0-130			3.52	25
1,3,5-Trimethylbenzene	3.75	4.58	4.63	122	123	70.0-130			1.09	25
1,2,4-Trimethylbenzene	3.75	4.77	4.69	127	125	70.0-130			1.69	25
1,3-Dichlorobenzene	3.75	4.45	4.32	119	115	70.0-130			2.96	25
1,4-Dichlorobenzene	3.75	4.47	4.35	119	116	70.0-130			2.72	25
Benzyl Chloride	3.75	4.50	4.21	120	112	70.0-152			6.66	25
1,2-Dichlorobenzene	3.75	4.43	4.34	118	116	70.0-130			2.05	25
1,2,4-Trichlorobenzene	3.75	4.35	4.00	116	107	70.0-160			8.38	25
Hexachloro-1,3-butadiene	3.75	4.52	4.49	121	120	70.0-151			0.666	25
Naphthalene	3.75	4.38	4.24	117	113	70.0-159			3.25	25
TPH (GC/MS) Low Fraction	203	237	232	117	114	70.0-130			2.13	25
Allyl Chloride	3.75	4.22	4.52	113	121	70.0-130			6.86	25
2-Chlorotoluene	3.75	4.41	4.37	118	117	70.0-130			0.911	25
Methyl Methacrylate	3.75	4.21	4.13	112	110	70.0-130			1.92	25
Tetrahydrofuran	3.75	4.15	4.06	111	108	70.0-137			2.19	25
2,2,4-Trimethylpentane	3.75	4.44	4.30	118	115	70.0-130			3.20	25
Vinyl Bromide	3.75	3.66	4.20	97.6	112	70.0-130			13.7	25
Isopropylbenzene	3.75	4.59	4.61	122	123	70.0-130			0.435	25
(S) 1,4-Bromofluorobenzene				*98.5*	*101*	*60.0-140*				

Method Blank (MB)

(MB) R3614761-3 01/20/21 10:07

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Benzene	U		0.0715	0.200
Cyclohexane	U		0.0753	0.200
Ethylbenzene	U		0.0835	0.200
4-Ethyltoluene	U		0.0783	0.200
Heptane	U		0.104	0.200
n-Hexane	U		0.206	0.630
Isopropylbenzene	U		0.0777	0.200
Toluene	U		0.0870	0.500
1,2,4-Trimethylbenzene	U		0.0764	0.200
1,3,5-Trimethylbenzene	U		0.0779	0.200
2,2,4-Trimethylpentane	U		0.133	0.200
m&p-Xylene	U		0.135	0.400
o-Xylene	U		0.0828	0.200
TPH (GC/MS) Low Fraction	U		39.7	200
(S) 1,4-Bromofluorobenzene	*98.6*			*60.0-140*

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

(LCS) R3614761-1 01/20/21 08:46 • (LCSD) R3614761-2 01/20/21 09:27

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
n-Hexane	3.75	4.30	4.29	115	114	70.0-130			0.233	25
Cyclohexane	3.75	4.69	4.80	125	128	70.0-130			2.32	25
Benzene	3.75	3.95	4.13	105	110	70.0-130			4.46	25
Heptane	3.75	3.96	4.09	106	109	70.0-130			3.23	25
Toluene	3.75	4.50	4.57	120	122	70.0-130			1.54	25
Ethylbenzene	3.75	4.27	4.35	114	116	70.0-130			1.86	25
m&p-Xylene	7.50	9.18	9.19	122	123	70.0-130			0.109	25
o-Xylene	3.75	4.74	4.86	126	130	70.0-130			2.50	25
4-Ethyltoluene	3.75	4.70	4.77	125	127	70.0-130			1.48	25
1,3,5-Trimethylbenzene	3.75	4.68	4.70	125	125	70.0-130			0.426	25
1,2,4-Trimethylbenzene	3.75	4.86	4.83	130	129	70.0-130			0.619	25
TPH (GC/MS) Low Fraction	203	231	235	114	116	70.0-130			1.72	25
2,2,4-Trimethylpentane	3.75	4.48	4.46	119	119	70.0-130			0.447	25
Isopropylbenzene	3.75	4.81	5.00	128	133	70.0-130		J4	3.87	25
(S) 1,4-Bromofluorobenzene				*101*	*100*	*60.0-140*				

Guide to Reading and Understanding Your Laboratory Report

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

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

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
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
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J4	The associated batch QC was outside the established quality control range for accuracy.

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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	LAO00356
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		

Pace Analytical National 1313 Point Mallard Parkway SE Suite B Decatur, AL, 35601

Alabama	40160
ANSI National Accreditation Board	L2239

Pace Analytical National 660 Bercut Dr. Ste. C Sacramento, CA, 95811

California	2961	Oregon	CA300002
Minnesota	006-999-465	Washington	C926
North Dakota	R-214		

Pace Analytical National 6000 South Eastern Avenue Ste 9A Las Vegas, NV, 89119

Nevada	NV009412021-1

Pace Analytical National 1606 E. Brazos Street Suite D Victoria, TX, 77901

Texas	T104704328-20-18

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

GeoDesign Inc. - Wilsonville, OR

9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Billing Information:
Accounts Payable
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

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: Kyle Haggart

Email To: khaggart@geodesigninc.com

Project Description:

City/State Collected: Astoria, OR

Please Circle: (PT) MT CT ET

Phone: 503-968-8787

Client Project #: BigBeams-1-04

Lab Project #: GEODESPOR-~~HAGGART~~ Hainley

SDG #: 1307895

Table #: M028

Collected by (print): Tim Hainley

Site/Facility ID #:

P.O. #:

Acctnum: GEODESPOR

Template: T177547

Prelogin: P809084

PM: 110 - Brian Ford

PB: RR 11-10-20

Shipped Via:

Collected by (signature): [signature]

Immediately Packed on Ice N X Y ___

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

Quote #:

Date Results Needed:

Analyses: NWTPHDX NOSGT 8ozClr-NoPres; NWTPHGX 40mlAmb/MeOH15ml/Syr; PAHs 8270E-SIM 8ozClr-NoPres; RCRA8 Metals 6020 8ozClr-NoPres; VOCs 8260D 40mlAmb/MeOH15ml/Syr; TO-15

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	NWTPHDX NOSGT 8ozClr-NoPres	NWTPHGX 40mlAmb/MeOH15ml/Syr	PAHs 8270E-SIM 8ozClr-NoPres	RCRA8 Metals 6020 8ozClr-NoPres	VOCs 8260D 40mlAmb/MeOH15ml/Syr	TO-15					Remarks	Sample # (lab only)
POST(011520)		~~SS~~ SS	–	1/15/20	1244	1						X						-01
PRE011520		~~SS~~ SS	–	1/15/20	1305	1						X						02
		SS																
		SS																
		SS																
		SS																
		SS																
		SS																
		SS																
		SS																

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

Remarks:

pH ______ Temp ______
Flow ______ Other ______

Samples returned via:
__ UPS __ FedEx __ Courier ________

Tracking # 141117522797

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]	1/18/21	1400		Trip Blank Received: Yes (No) HCL / MeoH TBR	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: AMB 2t1Unused	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Josh Grunjinsky	Date: 1/19/21 Time: 0845	Hold: Condition: NCF / (OK)

AMENDED COC - samples were collected in 2021; not 2020. please update sample ID's as shown here - incorrect dates originally on COC -

Scanned with CamScanner

GeoDesign Inc. - Wilsonville, OR

9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Billing Information:
Accounts Payable
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Pres Chk

Report to: Kyle Haggart

Email To: khaggart@geodesigninc.com

Project Description:

City/State Collected: Astoria, OR

Please Circle: (PT) MT CT ET

Phone: 503-968-8787

Client Project # BigBeams-1-04

Lab Project # GEODESPOR-~~HAGGART~~ Hainly

Collected by (print): Tim Hainly

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N X Y ___

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

Quote #

Date Results Needed

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

SDG #

Table #

Acctnum: GEODESPOR
Template: T177547
Prelogin: P809084
PM: 110 - Brian Ford
PB: RW 11-10-20

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	NWTPHDX NOSGT 8ozClr-NoPres	NWTPHGX 40mlAmb/MeOH15ml/Syr	PAHs 8270E-SIM 8ozClr-NoPres	RCRA8 Metals 6020 8ozClr-NoPres	VOCs 8260D 40mlAmb/MeOH15ml/Syr	TO-15	Remarks	Sample # (lab only)
POST(011521)		SS		1/15/21	1244	1						X		
POST(011521)		SS		1/15/21	1305	1						X		
		SS												
		SS												
		SS												
		SS												
		SS												
		SS												
		SS												
		SS												

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

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

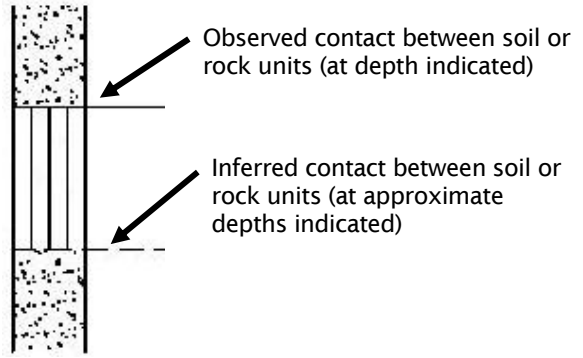
Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:	Hold: Condition: NCF / OK

APPENDIX D

SYMBOL	SAMPLING DESCRIPTION
	Location of sample collected in general accordance with ASTM D1586 using Standard Penetration Test with recovery
	Location of sample collected using thin-wall Shelby tube or Geoprobe® sampler in general accordance with ASTM D1587 with recovery
	Location of sample collected using Dames & Moore sampler and 300-pound hammer or pushed with recovery
	Location of sample collected using Dames & Moore sampler and 140-pound hammer or pushed with recovery
	Location of sample collected using 3-inch-O.D. California split-spoon sampler and 140-pound hammer with recovery
	Location of grab sample
	Rock coring interval
	Water level during drilling
	Water level taken on date shown

Graphic Log of Soil and Rock Types



GEOTECHNICAL TESTING EXPLANATIONS

ATT	Atterberg Limits	P	Pushed Sample
CBR	California Bearing Ratio	PP	Pocket Penetrometer
CON	Consolidation	P200	Percent Passing U.S. Standard No. 200 Sieve
DD	Dry Density		
DS	Direct Shear	RES	Resilient Modulus
HYD	Hydrometer Gradation	SIEV	Sieve Gradation
MC	Moisture Content	TOR	Torvane
MD	Moisture-Density Relationship	UC	Unconfined Compressive Strength
NP	Non-Plastic	VS	Vane Shear
OC	Organic Content	kPa	Kilopascal

ENVIRONMENTAL TESTING EXPLANATIONS

CA	Sample Submitted for Chemical Analysis	ND	Not Detected
P	Pushed Sample	NS	No Visible Sheen
PID	Photoionization Detector Headspace Analysis	SS	Slight Sheen
		MS	Moderate Sheen
ppm	Parts per Million	HS	Heavy Sheen

RELATIVE DENSITY - COARSE-GRAINED SOIL

Relative Density	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)
Very Loose	0 – 4	0 – 11	0 – 4
Loose	4 – 10	11 – 26	4 – 10
Medium Dense	10 – 30	26 – 74	10 – 30
Dense	30 – 50	74 – 120	30 – 47
Very Dense	More than 50	More than 120	More than 47

CONSISTENCY - FINE-GRAINED SOIL

Consistency	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)	Unconfined Compressive Strength (tsf)
Very Soft	Less than 2	Less than 3	Less than 2	Less than 0.25
Soft	2 – 4	3 – 6	2 – 5	0.25 – 0.50
Medium Stiff	4 – 8	6 – 12	5 – 9	0.50 – 1.0
Stiff	8 – 15	12 – 25	9 – 19	1.0 – 2.0
Very Stiff	15 – 30	25 – 65	19 – 31	2.0 – 4.0
Hard	More than 30	More than 65	More than 31	More than 4.0

PRIMARY SOIL DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOIL (more than 50% retained on No. 200 sieve)	GRAVEL (more than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (< 5% fines)	GW or GP	GRAVEL
		GRAVEL WITH FINES (≥ 5% and ≤ 12% fines)	GW-GM or GP-GM	GRAVEL with silt
			GW-GC or GP-GC	GRAVEL with clay
		GRAVEL WITH FINES (> 12% fines)	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND (50% or more of coarse fraction passing No. 4 sieve)	CLEAN SAND (<5% fines)	SW or SP	SAND
		SAND WITH FINES (≥ 5% and ≤ 12% fines)	SW-SM or SP-SM	SAND with silt
			SW-SC or SP-SC	SAND with clay
		SAND WITH FINES (> 12% fines)	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOIL (50% or more passing No. 200 sieve)	SILT AND CLAY	Liquid limit less than 50	ML	SILT
			CL	CLAY
			CL-ML	silty CLAY
			OL	ORGANIC SILT or ORGANIC CLAY
		Liquid limit 50 or greater	MH	SILT
			CH	CLAY
			OH	ORGANIC SILT or ORGANIC CLAY
HIGHLY ORGANIC SOIL			PT	PEAT

MOISTURE CLASSIFICATION

Term	Field Test
dry	very low moisture, dry to touch
moist	damp, without visible moisture
wet	visible free water, usually saturated

ADDITIONAL CONSTITUENTS

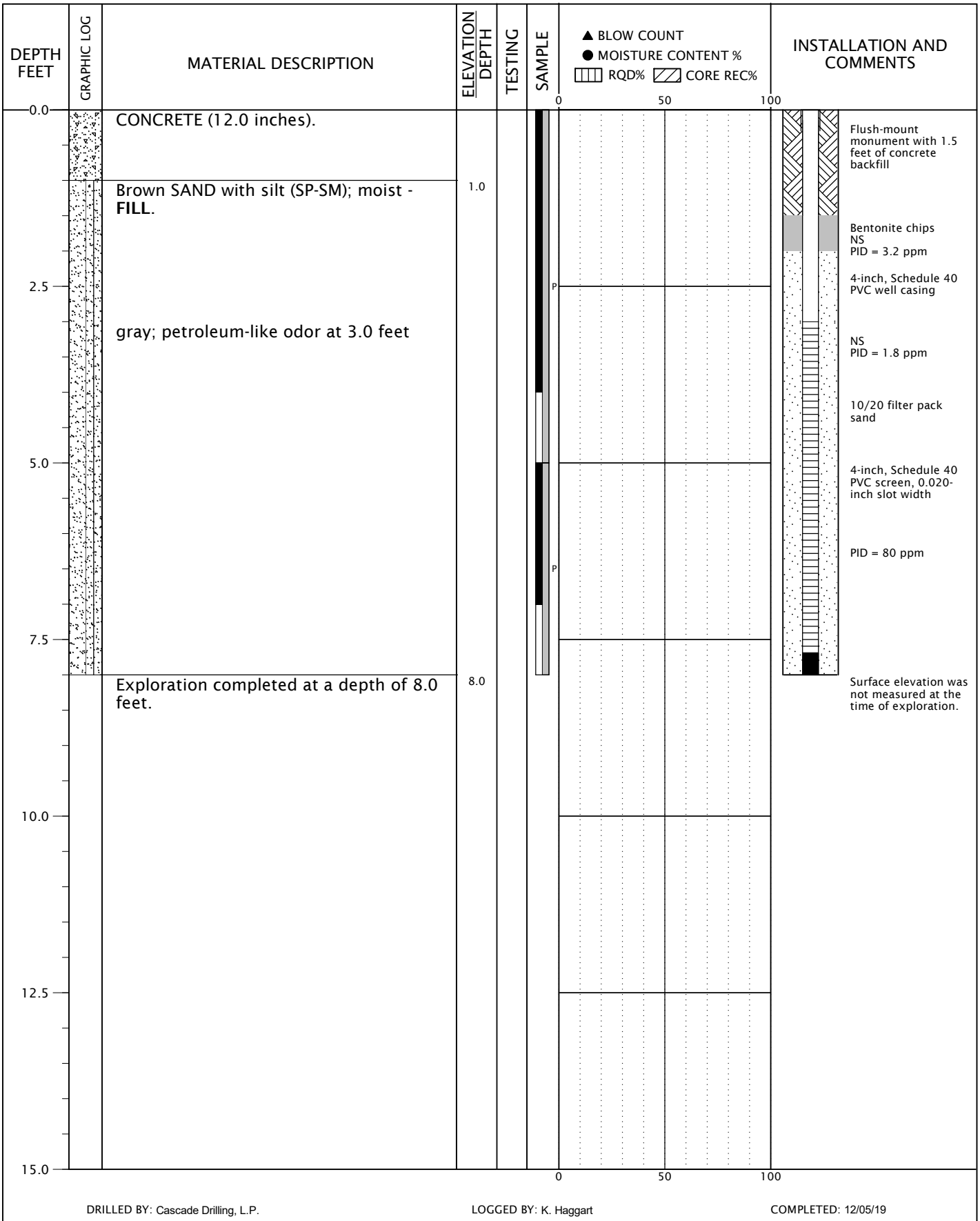
Secondary granular components or other materials such as organics, man-made debris, etc.

Percent	Silt and Clay In: Fine-Grained Soil	Silt and Clay In: Coarse-Grained Soil	Percent	Sand and Gravel In: Fine-Grained Soil	Sand and Gravel In: Coarse-Grained Soil
< 5	trace	trace	< 5	trace	trace
5 – 12	minor	with	5 – 15	minor	minor
> 12	some	silty/clayey	15 – 30	with	with
			> 30	sandy/gravelly	Indicate %

GEODESIGN INC AN NV5 COMPANY

SOIL CLASSIFICATION SYSTEM

TABLE D-2



DRILLED BY: Cascade Drilling, L.P.

LOGGED BY: K. Haggart

COMPLETED: 12/05/19

BORING METHOD: direct push (see document text)

BORING BIT DIAMETER: 2 1/4 inches

GEODESIGN INC
AN NV5 COMPANY

BIGBEAMS-1-04-05

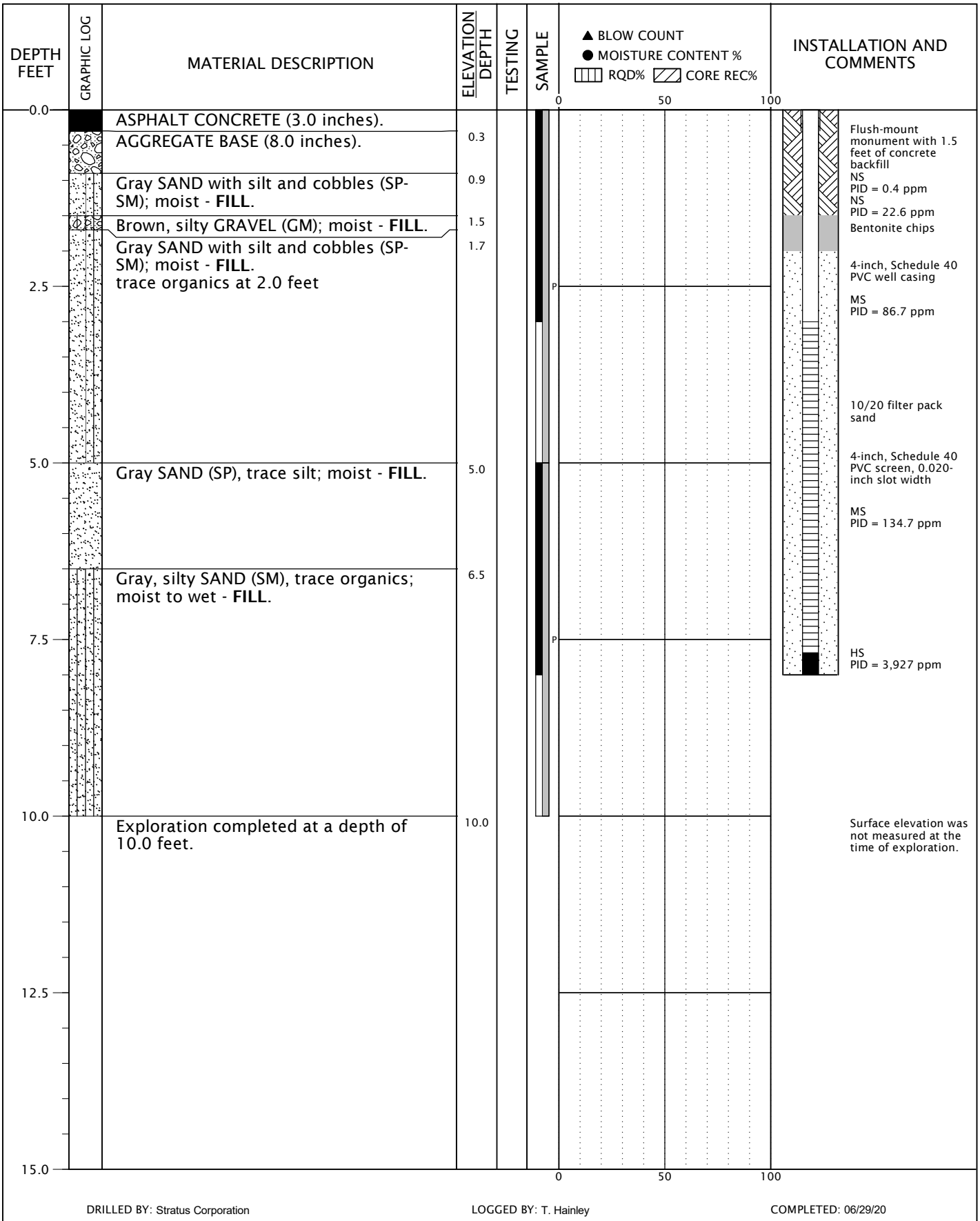
BORING SVE-1

MARCH 2021

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

FIGURE D-1

BORING LOG - GDI-NV5 - 1 PER PAGE BIGBEAMS-1-04-05-SVE1_3.GPJ GDI_NV5.GDT PRINT DATE: 3/20/21:KT



DRILLED BY: Stratus Corporation

LOGGED BY: T. Hainley

COMPLETED: 06/29/20

BORING METHOD: direct push and hollow-stem auger (see document text)

BORING BIT DIAMETER: 2 1/4 inches and 8 1/4 inches

GeoDesign Inc
AN NV5 COMPANY

BIGBEAMS-1-04-05

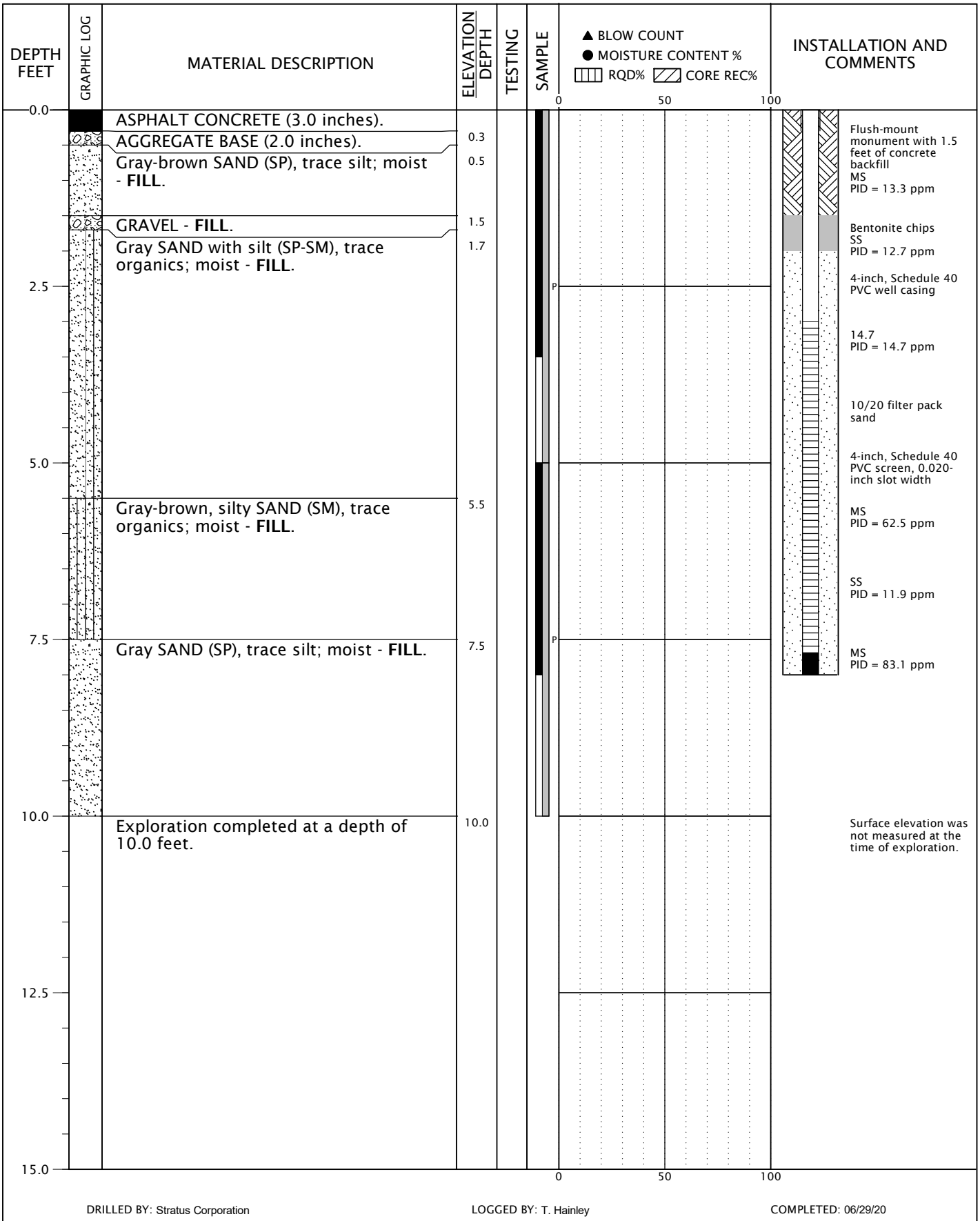
BORING SVE-2

MARCH 2021

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

FIGURE D-2

BORING LOG - GDI-NV5 - 1 PER PAGE BIGBEAMS-1-04-05-SVE1_3.GPJ GDI_NV5.GDT PRINT DATE: 3/20/21:KT



DRILLED BY: Stratus Corporation

LOGGED BY: T. Hainley

COMPLETED: 06/29/20

BORING METHOD: direct push and hollow-stem auger (see document text)

BORING BIT DIAMETER: 2 1/4 inches and 8 1/4 inches

GeoDesign Inc
AN NV5 COMPANY

BIGBEAMS-1-04-05

BORING SVE-3

MARCH 2021

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

FIGURE D-3

BORING LOG - GDI-NV5 - 1 PER PAGE BIGBEAMS-1-04-05-SVE1_3.GPJ GDI_NV5.GDT PRINT DATE: 3/20/21:KT

APPENDIX E

WASTE MANAGEMENT

Hillsboro Landfill, Inc
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 1577389

Customer Name	STRATUSCORP STRATUS CORPORATI	Carrier	STRATUS CORPORATION STRATUS CORPORAT
Ticket Date	08/26/2020	Vehicle#	31 Volume
Payment Type	Credit Account	Container	
Manual Ticket#		Driver	FLETCHER
Hauling Ticket#		Check#	
Route		Billing #	0000371
State Waste Code		Gen EPA ID	
Manifest	NA		
Destination		Grid	
PO	P19240W/P19237W/P20021W		
Profile	132432OR (LF01 Carbon)		
Generator	168-BLUE JUMP SUITE LLC BLUE JUMP SUITE LLC AND AHI CANNERY LLC 70 W MARINE		

	Time	Scale	Operator	Inbound		
In	08/26/2020 05:58:50	Inbound 1	JPRIME		Gross	47220 lb
Out	08/26/2020 05:58:50		JPRIME		Tare	26220 lb
					Net	21000 lb
					Tons	10.50

Comments

Consumer Comments? We want to know. Please call.

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Special Misc-Tons-	100	10.50	Tons				CLATSOP
2	EVF-P-Standard Env	100		%				CLATSOP

P20070

Total Tax
Total Ticket

Driver's Signature JP/Fletcher

WASTE MANAGEMENT

Hillsboro Landfill, Inc
3205 SE Minter Bridge
Hillsboro, OR, 97123
Ph: (503)-640-9427

Original
Ticket# 1577638

Customer Name	STRATUSCORP STRATUS CORPORATI	Carrier	STRATUS CORPORATION STRATUS CORPORAT
Ticket Date	08/27/2020	Vehicle#	31 Volume
Payment Type	Credit Account	Container	
Manual Ticket#		Driver	THOMAS
Hauling Ticket#		Check#	
Route		Billing #	0000371
State Waste Code		Gen EPA ID	
Manifest	NA		
Destination		Grid	
PO	P19240W/P19237W/P20021W		
Profile	132432OR (LF01 Carbon)		
Generator	168-BLUE JUMP SUITE LLC BLUE JUMP SUITE LLC AND AHI CANNERY LLC 70 W MARINE		

	Time	Scale	Operator	Inbound		
In	08/27/2020 10:48:58	Inbound 1	JPRIME		Gross	38760 lb
Out	08/27/2020 10:48:58		JPRIME		Tare	26220 lb
					Net	12540 lb
					Tons	6.27

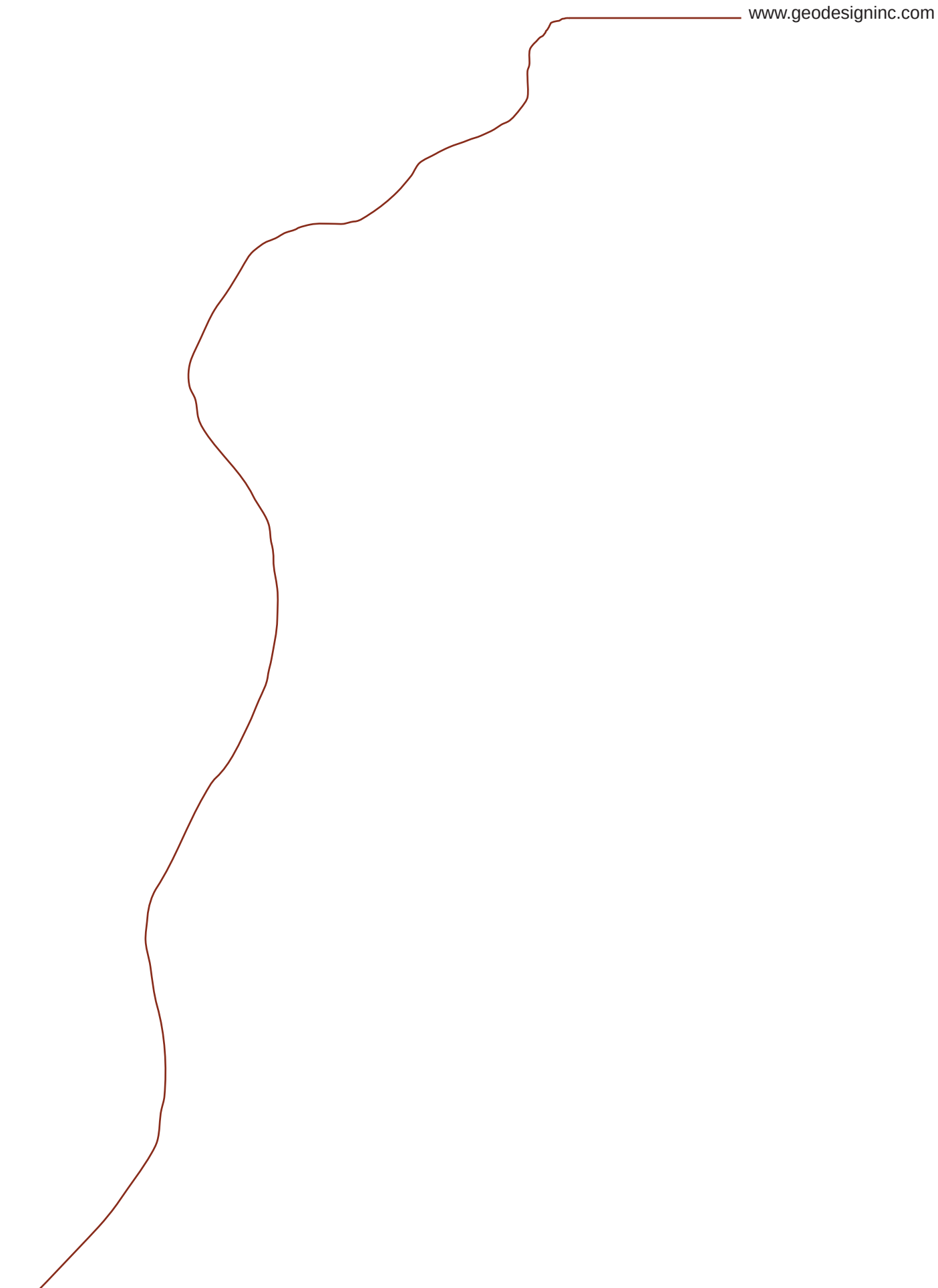
Comments

Consumer Comments? We want to know. Please call.

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Special Misc-Tons-	100	6.27	Tons				CLATSOP
2	EVF-P-Standard Env	100		%				

Total Tax
Total Ticket

Driver's Signature Thomas


www.geodesigninc.com