September 13, 2023

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

Attention: Sarah Greenfield

Quarterly Report
Fourth Round Pilot Shutdown Monitoring Results
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon
LUST File No. 04-18-0818
ECSI No. 6381
Project: BigBeams-1-04-05

INTRODUCTION

NV5 is pleased to submit this quarterly report summarizing the results of the fourth round of pilot shutdown monitoring for the Former Astoria Warehousing Site located at 70 West Marine Drive in Astoria, Oregon (subject property). The subject property is shown relative to surrounding physical features on Figure 1. A site plan is shown on Figure 2. Acronyms and abbreviations used herein are defined at the end of this document.

BACKGROUND

NV5 prepared an SVE System Pilot Shutdown Work Plan (Work Plan) in September 2022 describing a scope of work to (1) evaluate if permanent cessation of the active SVE remediation system is feasible and (2) monitor the effects and potential rebound conditions associated with the proposed permanent cessation of the SVE system that was designed and installed at the subject property in general accordance with the PPA requirements.[1] DEQ approved the Work Plan on September 21, 2022. A detailed discussion of background information, rationale for implementing this scope of work, and identification of baseline conditions for the purposes of rebound evaluation is presented in the Work Plan.

[1] NV5, 2022. *SVE System Pilot Shutdown Work Plan; Former Astoria Warehousing Site; 70 West Marine Drive; Astoria, Oregon; DEQ LUST File No. 04-18-0818; DEQ ECSI File No. 6381,* dated September 8, 2022. Project: BigBeams-1-04-05

The first round of pilot shutdown monitoring is summarized in our report dated November 21, 2022. The second round of pilot shutdown monitoring is summarized in our report dated March 16, 2023. The third round of pilot shutdown monitoring is summarized in our report dated June 5, 2023. Based on the conclusions presented in these reports, we recommended continuance of the pilot shutdown monitoring program with DEQ's concurrence.[2]

ACTIVITIES COMPLETED DURING REPORTING PERIOD

In accordance with the Work Plan, NV5 conducted the fourth round of pilot shutdown monitoring activities between July 25 and 27, 2023. A detailed description of monitoring activities completed during this reporting period is presented in the sections below.

SUB-SLAB VAPOR MONITORING

On July 27, 2023, NV5 personnel accessed and sampled the four sampling locations previously installed in the former can manufacturing warehouse and shop (VP-1 through VP-4; Figure 2). Specifically, each Vapor Pin® was sampled as follows:

- Accessed each Vapor Pin® and connected to a micromanometer. Recorded ambient sub-slab pressure/vacuum at each monitoring point.
- Connected each Vapor Pin® to laboratory-provided, 6-liter Summa canisters and sampling trains using new, disposable PFA tubing.
- Installed a leak-check system at each location following DEQ-established protocol. The leak-check protocol consisted of placing cloths saturated with isopropanol around the fittings and the ground penetration. Each sub-slab vapor sample was analyzed for isopropanol to evaluate if the sampling system was sufficiently sealed.
- Purged each Vapor Pin® of approximately three volumes of dead air space (tubing and sampling train) using a calibrated 10.6-eV PID. Recorded the PID reading before sample collection.
- Collected the sub-slab vapor sample using a 6-liter Summa canister with an in-line filter (0.7 micron) and flow controller (less than 200 mL/min). The initial and final vacuum pressures of the Summa canister were measured and recorded on the laboratory chain-of-custody form. The sub-slab vapor samples were analyzed for gasoline-range hydrocarbons and VOCs by EPA Method TO-15.

The sub-slab vapor sample collection start and end times, initial and final Summa canister vacuum pressures, barometric pressure, and ambient temperature were measured at each sub-slab vapor sample location and are presented in the table below.

[2] DEQ provided concurrence in correspondences dated December 15, 2022, April 5, 2023, and July 13, 2023.

Summary of Sub-Slab Vapor Sampling – July 2023

Sample I.D.	Date	Start/End Time	Initial/Final Vacuum (inHg)	Barometric Pressure (inHg)	Ambient Temperature (°F)
VP-1	07/76/23	13:50/14:00	30.0/4.0	30.11	~65
VP-2		13:35/13:45	30.0/4.0		
VP-3		13:20/13:30	27.0/3.0		
VP-4		14:10/14:15	30.0/4.0		

The sub-slab vapor sample chemical analytical results from the July 2023 monitoring event are discussed in the "Chemical Analytical Results" and "Data Evaluation" sections and summarized in Table 1, which also includes the results of prior sub-slab vapor sampling events for reference. Sub-slab vapor field sampling forms from the July 2023 event are presented in Attachment A.

GROUNDWATER GAUGING AND SAMPLING

NV5 personnel accessed each well (MW-1 through MW-8, OAS-1 through OAS-4, and PAS-2) for gauging and sampling purposes.[3] On July 25, 2023, NV5 gauged the aforementioned monitoring and observation wells.[4] NV5 collected depth to groundwater measurements from each well using an oil/water interface probe. The depth to groundwater measurements and calculated groundwater elevations are summarized in Table 2. Free product was not observed in any of the wells during the July 2023 monitoring event. The calculated groundwater elevation data indicate that shallow groundwater beneath the subject property generally flows north, which is consistent with previous findings. However, groundwater appears to have northwest and northeast components toward the shoreline that may be affected by tidal influences. A groundwater contour map using the elevation data collected on July 25, 2023, is shown on Figure 3.

NV5 sampled monitoring wells MW-1 through MW-8 on July 25, 26, and 27, 2023, in general accordance with the groundwater sampling methodology previously employed at the subject property. Each well was purged in general accordance with the EPA-recommended low-flow purging and sampling procedure using a peristaltic pump connected to new, expendable HDPE and silicon tubing. Groundwater quality parameters were measured using a YSI 556 multiparameter system until the following groundwater parameters stabilized over 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)

[3] Wells OAS-1 through OAS-4 and PAS-2 are within the shop area. Refer to Figure 3 of the Work Plan for locations.
[4] The sequence of gauging and sampling during groundwater monitoring generally progressed from the least-impacted to the most-impacted wells based on prior chemical analytical data.

A summary of groundwater field parameters is presented in Table 3. Once the field parameters stabilized, NV5 collected a groundwater sample from each well into a laboratory-prepared container. Groundwater samples were immediately placed on ice. Standard chain-of-custody protocols were followed during transportation of samples to the laboratory. The groundwater sample chemical analytical results from the July 2023 monitoring event are discussed in the "Chemical Analytical Results" and "Data Evaluation" sections and summarized in Table 4, which includes the results of prior groundwater sampling for reference. Groundwater gauging and sampling field forms from the July 2023 event are presented in Attachment A.

Sampling equipment used in the collection of groundwater samples was decontaminated prior to use. Decontamination was performed on reusable sample processing equipment that came into contact with sampling media and the wells. Decontamination was performed prior to sampling each location using the following procedure:

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

INDOOR AIR MONITORING

On July 27, 2023, following sub-slab vapor sampling, NV5 deployed eight air samplers at the subject property. Each air sampler consisted of a Radiello 130 passive air sampler and was deployed for approximately 14 days. For comparison purposes, each sample was collected at the same location, approximately, as the previously collected indoor air samples. Seven air samples were collected from inside the subject property structure and one background air sample was collected from the exterior of the subject property structure. The sampling locations are shown on Figure 2.

Each sample was collected at approximately breathing level in areas of high occupancy and/or areas where previous vapor samples indicated elevated concentrations of COCs. The background air sample was collected from the exterior of the subject property structure at a height of 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 – July/August 2023

Sample I.D.	Location Description	Date	Start/End Time	Initial/Final Barometric Pressure (inHg)	Initial/Final Ambient Temperature (°F)
Indoor-1	Office area	07/27/23 through 08/10/23	15:00/09:20	30.11/29.97	75/74 (indoor) 66/63 (outdoor)
Indoor-2	Office area		15:05/09:25		
Indoor-3	Warehouse		15:10/09:30		
Indoor-4	Warehouse		15:15/09:35		
Indoor-5	Shop area		15:20/09:45		
Indoor-6	Warehouse		15:25/09:50		
Indoor-7	Warehouse		15:30/09:55		
Background	Exterior		15:35/10:00		

The indoor air sample chemical analytical results from the July/August 2023 monitoring event are discussed in the "Chemical Analytical Results" and "Data Evaluation" sections and summarized in Table 5. Indoor air sampling field forms from the July/August 2023 event are presented in Attachment A.

RIVERBANK OBSERVATIONS

NV5 conducted a series of visual observations of the riverbank adjacent to the subject property for evidence of groundwater seeps and petroleum-like sheens on July 25 and 26, 2023. The riverbank observations were conducted from the top of the bank at relatively low tidal stages. The riverbank observations were conducted by walking the top of the shoreline along the subject property, allowing for visual observations of the slope of the riverbank, which generally consists of riprap. The pier on the northwest portion of the subject property has concrete walls along the bank of the river and the small bay to the east has a sandy shoreline on the south end along West Marine Drive.

Groundwater seeps and/or petroleum-like sheens were not observed during the July 2023 riverbank observations. A summary of the riverbank observations, including previous and more frequent observations associated with apparent sheens previously originating from the storm line outfall, is presented in Table 6. Riverbank field observation forms from the July 2023 event are presented in Attachment A.

CHEMICAL ANALYTICAL RESULTS

SUB-SLAB VAPOR SAMPLES

The four sub-slab vapor samples (VP-1 through VP-4) collected in July 2023 were submitted to Pace Analytical of Mount Juliet, Tennessee, 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 shown in Table 1, which also

includes previous sub-slab vapor analytical results.[5] The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Attachment B.

Gasoline-range hydrocarbons were not detected above the laboratory method reporting limit in sub-slab vapor samples VP-1 through VP-4 collected in July 2023. Several petroleum-related VOCs were detected in sub-slab vapor samples VP-1 through VP-4 collected in July 2023. Each of the detected concentrations of VOCs was substantially less than the corresponding DEQ *Vapor Intrusion into Building*s RBC for occupational receptors.

GROUNDWATER SAMPLES

Groundwater samples collected during the July 2023 groundwater monitoring event 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 shown in Table 4, which also includes previous groundwater analytical results.[6] The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Attachment B.

Gasoline-range hydrocarbons were detected in the groundwater samples collected from monitoring wells MW-1, MW-4, and MW-8 at concentrations of 21,200 µg/L, 16,000 µg/L, and 16,200 µg/L, respectively. These detected concentrations are greater than the corresponding DEQ *Groundwater in Excavation* RBCs for construction/excavation worker receptors, but less than the DEQ *Volatilization to Outdoor Air* and *Vapor Intrusion into Building*s 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 subject property.

Naphthalene was detected in the groundwater sample collected from monitoring well MW-1 at a concentration of 1,050 µg/L, which exceeds the corresponding DEQ *Groundwater in Excavation* RBC for construction/excavation worker receptors but is less than the DEQ *Volatilization to Outdoor Air* and *Vapor Intrusion into Building*s RBC for occupational receptors. Other VOC COCs were otherwise either not detected or were detected at concentrations less than applicable DEQ RBCs in the July 2023 groundwater samples.

INDOOR AIR SAMPLES

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 DEQ *Inhalation* RBCs for occupational receptors. The indoor air sample chemical analytical results are compared to applicable regulatory criteria in the discussion below and in Table 5, which also

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[5] In June 2023, DEQ published amended RBCs for vapor-intrusion exposure pathways in conjunction with developing updated vapor intrusion guidance. DEQ is applying the amended RBCs to existing cleanup sites on a case-by-case basis. For the purposes of consistency in this pilot shutdown data evaluation, the July 2023 results are compared to the earlier RBCs from May 2018.

[6] In June 2023, DEQ published amended RBCs for vapor-intrusion exposure pathways in conjunction with developing updated vapor intrusion guidance. DEQ is applying the amended RBCs to existing cleanup sites on a case-by-case basis. For purposes of consistency in this pilot shutdown data evaluation, the July 2023 results are compared to the earlier RBCs from May 2018.

includes previous indoor air analytical results. The chemical analytical program details, laboratory report, and chain-of-custody documentation are presented in Attachment B.

Up to eight VOCs with DEQ-established screening levels were detected in the seven indoor air samples (Indoor-1 through Indoor-7). The detected concentrations of VOCs in the indoor air samples collected in July/August 2023 were less than the corresponding DEQ *Inhalation* RBCs for occupational receptors.

Benzene, carbon tetrachloride, chloroform, ethylbenzene, toluene, m,p-xylene and o-xylene were also detected in the background sample (Background) collected from the exterior of the subject property structure in July/August 2023.

DATA EVALUATION

SUB-SLAB VAPOR SAMPLES

For sub-slab vapor, the Work Plan defined rebound as those concentrations exceeding the August 2021 baseline sub-slab vapor concentrations for two consecutive quarterly monitoring events or increasing concentrations, as demonstrated by a trend evaluation, over three consecutive monitoring events. The Work Plan also stated that contingency measures will be triggered if rebound conditions are met or if sub-slab concentrations exceed the applicable DEQ RBCs for occupational receptors in two consecutive quarterly monitoring events.

Relative to the prior sub-slab vapor sampling events, laboratory method reporting limits for gasoline-range hydrocarbons in sub-slab vapor sample VP-4 were elevated for gasoline-range hydrocarbons. However, all laboratory method reporting limits remained substantially below DEQ RBCs and the data are not negatively affected, in our professional opinion.

Based on our review of the July 2023 sub-slab vapor sample chemical analytical results, the detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs in sub-slab vapor samples VP-1 through VP-4 continue to exhibit stable or decreasing trends relative to baseline values and were below all applicable DEQ RBCs. This stable/decreasing trend in sub-slab vapor concentrations has been demonstrated over four consecutive quarterly sampling events following SVE system cessation.

GROUNDWATER SAMPLES

For groundwater, the Work Plan defined rebound as those concentrations exceeding the January 2022 baseline groundwater concentrations for two consecutive quarterly monitoring events or increasing concentrations, as demonstrated by a trend evaluation, over three consecutive monitoring events. The Work Plan also stated that contingency measures will be triggered if rebound conditions are met or if groundwater concentrations exceed the applicable DEQ RBCs for occupational receptors in two consecutive quarterly monitoring events.

A chart depicting the results of groundwater sampling results for all monitoring wells (for gasoline-range hydrocarbons) is presented in Attachment C. Our review of the July 2023 groundwater sample chemical analytical results indicates the following:

- The detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs in the groundwater sample collected from monitoring well MW-1 were elevated in comparison with the baseline value and the preceding three sampling results and slightly reduced relative to the October 2022 and January 2023 results. Similar to the April 2023 results, the concentrations of gasoline-range hydrocarbons and naphthalene detected in the groundwater sample collected from monitoring well MW-1 slightly exceeded the DEQ *Groundwater in Excavation* RBCs for construction/excavation workers.[7] Therefore, it appears that a rebound condition has been met at monitoring well MW-1.

- The detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs in the groundwater sample collected from monitoring well MW-2 indicate variable trends. The detected concentration of gasoline-range hydrocarbons in July 2023 was the lowest detected value over the course of the monitoring period. However, petroleum-related VOCs were detected in July 2023 at concentrations slightly exceeding the prior three sampling events. None of the detected concentrations of COCs exceeded the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers. Technically, a rebound condition has been met at monitoring well MW-2. However, the July 2023 results with respect to gasoline-range hydrocarbons exhibits a downward trend, and we consider the rebound slight given that this monitoring well previously exhibited some of the highest gasoline-range hydrocarbon concentrations prior to the implementation of SVE.

- The detected concentration of gasoline-range hydrocarbons in the groundwater sample collected from monitoring well MW-3 was less than the January 2022 baseline value, and the past three monitoring events indicate an overall decreasing trend over the pilot shutdown monitoring period. October 2022 data are not available for comparison because monitoring well MW-3 was not initially included as part of the array of monitoring wells sampled quarterly as part of the pilot shutdown monitoring program. Notably, TCE was detected for the first time in monitoring well MW-3 during the July 2023 monitoring event. As noted in our prior quarterly report, this well is near the most hydraulically up-gradient portion of the subject property and the varying concentrations in gasoline-range hydrocarbons (and detection of TCE for the first time) may reflect an unstable plume from the neighboring Wild Willie's site (and/or other upgradient sites) across West Marine Drive from the subject property. None of the detected concentrations of COCs in monitoring well MW-3 exceeded the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers. In the context of rebound, the July 2023 results generally exhibit a decreasing trend relative to the April 2023 results and it is our opinion that site-related impacts at MW-3 are generally stable or decreasing. Moreover, the variability regarding other (non-site) COCs should be viewed in the context of potentially dynamic up-gradient contaminant plume conditions, because this well is at the south extent of the inferred ROI for former SVE system operations.

- The detected concentration of gasoline-range hydrocarbons in the groundwater sample collected from monitoring well MW-4 were reduced relative to the prior three sampling events, and less than the January 2022 baseline value. October 2022 data are not available for comparison because monitoring well MW-4 was not included as part of the array of

[7] RBC exceedances for this exposure pathway are addressed through implementation of the DEQ-approved CMMP.

monitoring wells sampled quarterly as part of the pilot shutdown monitoring program. Despite the lack of data from October 2022, we conclude that a rebound condition meeting the criteria in the Work Plan has not been met at monitoring well MW-4 over the course of the pilot shutdown monitoring period.

- The detected concentration of gasoline-range hydrocarbons in the groundwater sample collected from monitoring well MW-5 were slightly reduced relative to the prior (April 2023) value. However, petroleum-related VOCs exhibit a slight increase relative to the prior sampling event. October 2022 data are not available for comparison because monitoring well MW-5 was not included as part of the array of monitoring wells sampled quarterly as part of the pilot shutdown monitoring program. None of the detected concentrations of COCs exceeded the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers. As of July 2023, the detected concentrations of gasoline-range hydrocarbons and petroleum-related VOCs have exceeded the baseline value for two consecutive events and technically qualify as a rebound condition. However, our review indicates that the rebound condition at MW-5 is marginal, and we note that this monitoring well is on the most upgradient portion of the subject property and outside the ROI of the former SVE system.

- The detected concentration of gasoline-range hydrocarbons in the groundwater sample collected from monitoring well MW-6 was nearly identical to the baseline value and exhibits a decreasing trend relative to the two prior sampling events. The pattern of detected petroleum-related VOCs indicates a generally stable or decreasing trend over the pilot shutdown monitoring period, and none of the detected concentrations of COCs exceeded the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers. The technical definition of rebound has been met at monitoring well MW-6; however, we categorize the rebound condition as marginal given the results over the past three monitoring events and the fact that this monitoring well previously exhibited some of the highest gasoline-range hydrocarbon concentrations before the implementation of SVE.

- The detected concentration of gasoline-range hydrocarbons and petroleum-related VOCs in the groundwater sample collected from monitoring well MW-7 were reduced or stable in comparison to the two preceding (January and April 2023) results and elevated in comparison to the baseline value. None of the detected concentrations of COCs exceeded the respective DEQ *Groundwater in Excavation* RBCs for construction/excavation workers. The technical definition of a rebound condition has been met at monitoring well MW-7. However, we view this condition as marginal because, much as discussed above regarding the other monitoring wells, the July 2023 results at monitoring well MW-7 exhibit stable or decreasing trends following initial concentration increases relative to the baseline value.

- The detected concentration of gasoline-range hydrocarbons in the groundwater sample collected from monitoring well MW-8 was less than the baseline value and exhibits a decreasing trend relative to the two preceding (January and April 2023) results. Similar to prior events, the concentration of gasoline-range hydrocarbons detected in the groundwater sample collected from monitoring well MW-8 exceeded the DEQ *Groundwater in Excavation* RBC for construction/excavation workers.[5] Benzene was also detected in the groundwater sample collected from monitoring well MW-8 at concentrations exceeding the respective DEQ

Groundwater in Excavation RBCs for construction/excavation workers.[5] The technical definition of a rebound condition has been met at monitoring well MW-8. However, we view this condition as marginal as (similar to the discussion of other monitoring wells discussed above) the July 2023 results at monitoring well MW-8 exhibit stable or decreasing trends following initial concentration increases relative to the baseline value.

Further discussion of rebound conditions specific to groundwater samples (in accordance with the Work Plan) is presented in the "Conclusions" and "Recommendations" sections.

INDOOR AIR SAMPLES

To evaluate potential rebound conditions associated with SVE system cessation, the August 2021 sample results are used to represent baseline conditions. Regardless of the baseline values, indoor air data are used to confirm that indoor air concentrations are protective of occupational workers. The Work Plan states that contingency measures will be triggered if indoor air concentrations for site COCs exceed the applicable DEQ RBCs for occupational receptors in any single monitoring event.

Based on our review of the July/August 2023 indoor air sample chemical analytical results, the detected concentrations of petroleum-related VOCs in indoor air samples Indoor-1 through Indoor-7 were generally equal to or less than previously detected concentrations and below applicable DEQ RBCs. Several of the detected VOCs in indoor air samples (notably benzene) were also detected in the Background air sample. As described above, sub-slab vapor samples VP-1 through VP-4 generally exhibited stable or decreasing trends relative to baseline values and were below all applicable DEQ RBCs, indicating that vapors have not accumulated below the slab over the course of the pilot shutdown monitoring period at concentrations representing a vapor intrusion risk.

Chloroform was detected in several of the indoor air samples at concentrations less than the DEQ RBCs for occupational receptors. As noted earlier, the presence of chloroform is attributed to the use of municipal (chlorinated) water for the periodic washing operations needed for the maintenance of brewing equipment used in the facility and is not a petroleum-related COC at the subject property.

CONCLUSIONS

Based on our review of the pilot shutdown monitoring results, we present the following conclusions:

- The sub-slab vapor sampling results from the fourth round of pilot shutdown monitoring conducted in July 2023 do not indicate a rebounding trend in sub-slab vapor, and DEQ RBCs (including the 2023 amended RBCs with substantially reduced values) were not exceeded in any sub-slab vapor samples collected over the pilot shutdown monitoring period. Contrary to some of the groundwater trends described herein, the sub-slab vapor sampling results conducted over the pilot shutdown monitoring period exhibit downward or stable trends for

petroleum-related site COCs. From this observation, we conclude that the subject property structure is not efficient in terms of encapsulating vapors originating from impacts to subsurface media.

- The groundwater sampling results from the fourth round of pilot shutdown monitoring conducted in July 2023 (which included sampling of all subject property monitoring wells) indicate that rebound (as technically defined in the Work Plan) has occurred in all monitoring wells except for MW-4. However, it is notable that the July 2023 groundwater sampling results consistently reveal a decreasing pattern of petroleum-range hydrocarbon detections in comparison to an initial increasing trend relative to baseline values. Moreover, DEQ's RBCs (the May 2018 values used throughout the project) for occupational receptors for volatilization pathways were not exceeded in any groundwater samples collected and the results of the sub-slab vapor sampling throughout the pilot shutdown monitoring period do not indicate a correlative increase in vapor concentrations as a result of increasing (or variable) COC concentrations in groundwater. As compared to DEQ's amended and significantly reduced RBCs (June 2023 values) for vapor intrusion, gasoline-range hydrocarbons and/or naphthalene have been detected in groundwater samples collected from monitoring wells MW-1, MW-2, MW-4, MW-5, MW-6, MW-7, and MW-8 at concentrations exceeding the amended (2023) RBC values. However, the results of sub-slab vapor and indoor air sampling conducted throughout the pilot shutdown monitoring period provide a more reliable (site-specific) metric to assess the volatilization pathway from groundwater, and those results indicate that the groundwater exceedances are not resulting in unacceptable risks to on-site workers, even when compared to the respective amended and substantially reduced RBC values. In addition, evidence of free product or groundwater seeps (i.e., with petroleum-like sheens) has not been observed during monitoring well gauging and riverbank observations conducted over the course of the pilot shutdown monitoring period.

- The variable results and indefinite trends observed in the groundwater samples collected from monitoring wells MW-3, MW-4, and MW-5 over the past three monitoring events are peculiar given their distance from the previously established SVE system ROI and the fact that monitoring wells MW-3 and MW-5 are in the most hydraulically up-gradient portion of the subject property. We infer from the existing data that the conditions within the up-gradient groundwater plume originating from area(s) south of the subject property may not be fully stable. This inference is further supported by the first detection of TCE in monitoring well MW-3 during the July 2023 groundwater sampling event.

- The indoor air sampling results from the fourth round of pilot shutdown monitoring conducted in July/August 2023 exhibit similar results relative to prior sampling events, and DEQ RBCs were not exceeded in any indoor air samples collected.

RECOMMENDATIONS

Based on the rebound criteria established in the Work Plan, it appears rebound as defined in the Work Plan has occurred in several groundwater monitoring wells. However, a correlative increase in sub-slab vapor COC concentrations has not been observed and site-related COCs

have not been detected in sub-slab vapor or indoor air samples at concentrations exceeding DEQ RBCs (including the 2023 amended values). Rather, sub-slab vapor concentration trends over the course of the pilot shutdown monitoring period indicate steady or decreasing COC concentrations in sub-slab vapor, with concentrations remaining well below DEQ's respective RBCs. In addition, the fourth quarter pilot shutdown monitoring event indicates decreasing groundwater concentration trends in most of the subject property monitoring wells.

Over the course of the pilot shutdown monitoring period, there has been no indication of free-product buildup in any monitoring well and sheens have not been observed in seeps along the adjacent riverbank areas. Based on our review of the collective pilot shutdown monitoring data and as outlined in the rationale presented in our prior report dated June 5, 2023, we are not recommending the implementation of contingencies for the groundwater condition. Data collected over the course of the pilot shutdown monitoring program indicate that re-initiation of the SVE system (or other active remediation) is not required to maintain protective site conditions. The pilot shutdown monitoring program has demonstrated that cessation of the SVE system has not resulted in unacceptable concentrations of site-related COCs in sub-slab vapor or indoor air throughout the subject property, and groundwater concentrations exceeding DEQ's RBCs for construction/excavation workers is addressed through measures prescribed in the CMMP.

For the reasons stated herein, we propose deconstruction and removal of the SVE system (excluding the subsurface SVE wells and associated plumbing components) currently at the subject property. In addition, we recommend cessation of the pilot shutdown monitoring program and request DEQ initiate steps to issue a Certificate of Completion for the subject property.

♦ ♦ ♦

We appreciate the opportunity to provide this information. Please contact us if you have questions regarding this report.

Sincerely,

NV5

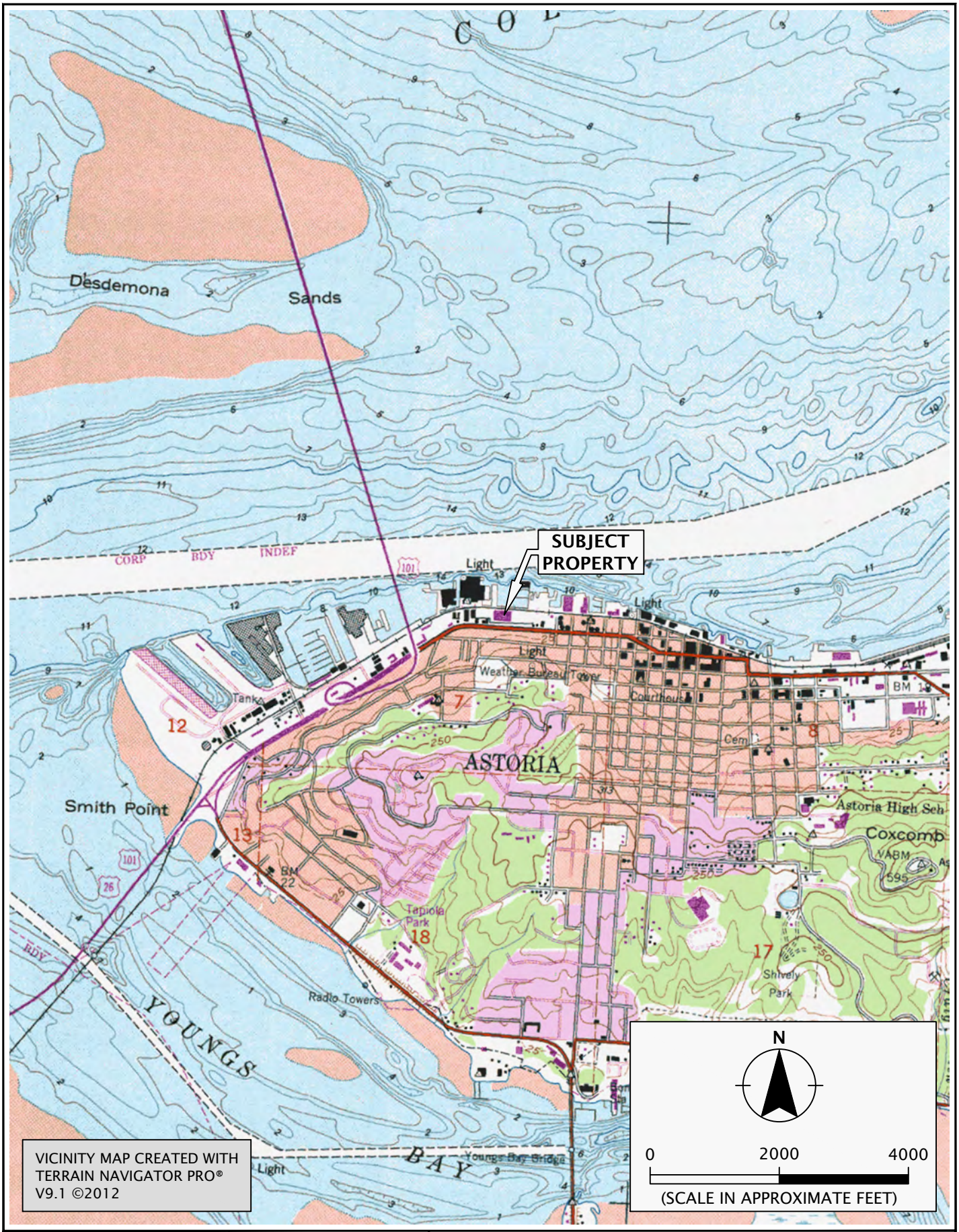
Erik A. Hedberg, P.E., C.W.R.E.
Associate Engineer

Mike F. Coenen, P.E.
Principal Engineer

cc: Jeff Schatz, Oregon Department of Environmental Quality
Rebecca Digiustino, Oregon Department of Environmental Quality
Chris Nemlowill, Blue Jump Suit LLC and AHI Cannery LLC
Brad Depuyt, Blue Jump Suit LLC and AHI Cannery LLC
Al Jaques, CM Services Co.

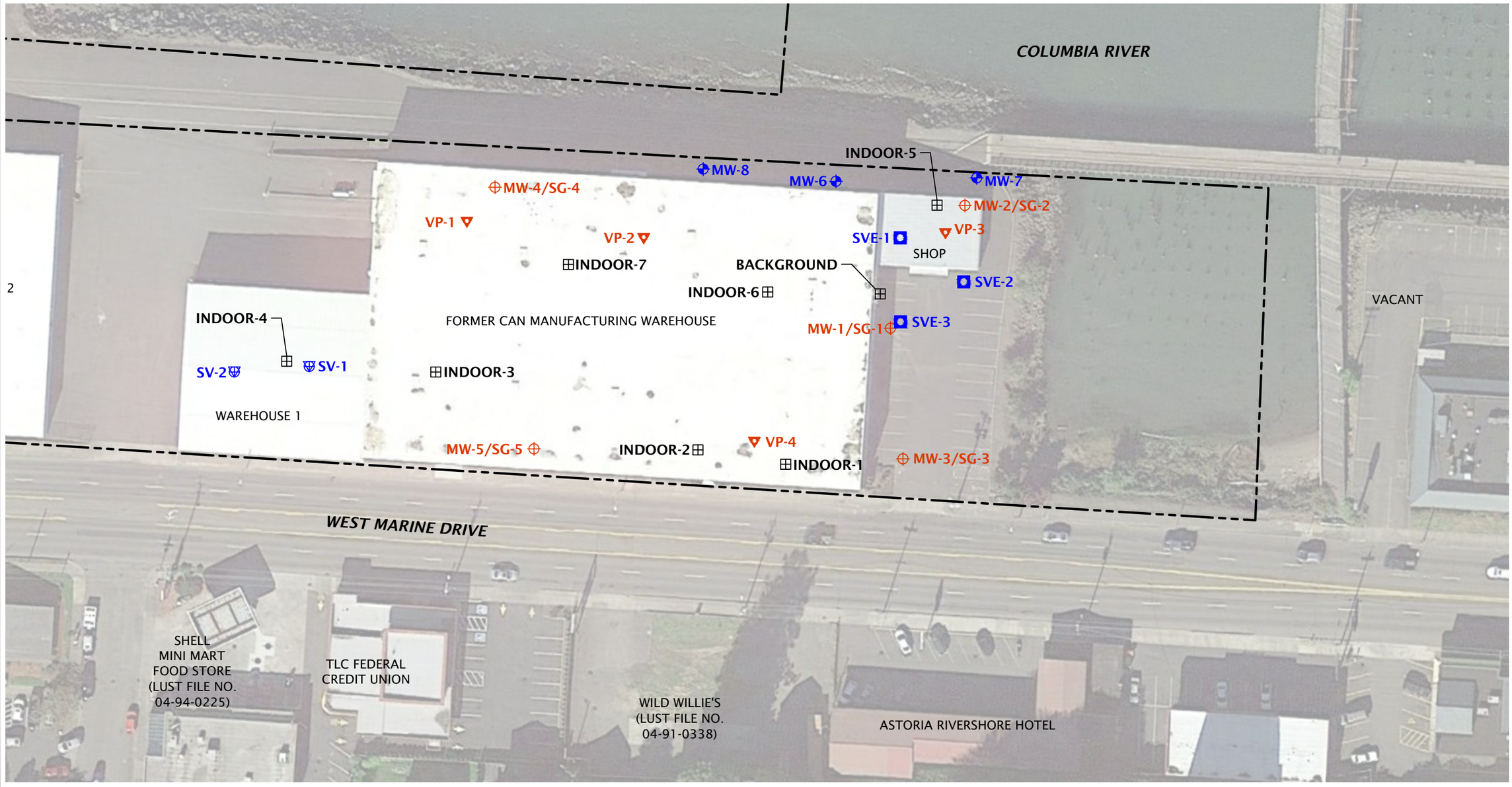
EAH:MFC:sn
Attachments
One copy submitted
Document ID: BigBeams-1-04-05-091323-envlr.docx

FIGURES



NV5	BIGBEAMS-1-04-05	**VICINITY MAP**	
	SEPTEMBER 2023	FORMER ASTORIA WAREHOUSING SITE ASTORIA, OR	**FIGURE 1**

Printed By: Mike.Miller | Print Date: 9/6/2023 3:09:51 PM
File Name: J:\A-D\BigBeams\BigBeams-1\BigBeams-1-04\BigBeams-1-04-05- Monitoring\Figures\CAD\PSMR\4th report\BigBeams-1-04-05-VM01.dwg | Layout: FIGURE 1



LEGEND:

———	SUBJECT PROPERTY BOUNDARY
SVE-1	SVE WELL
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)
INDOOR-1	RADIELLO SAMPLE

N

0 60 120

(SCALE IN FEET)

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

SITE PLAN

FIGURE 2

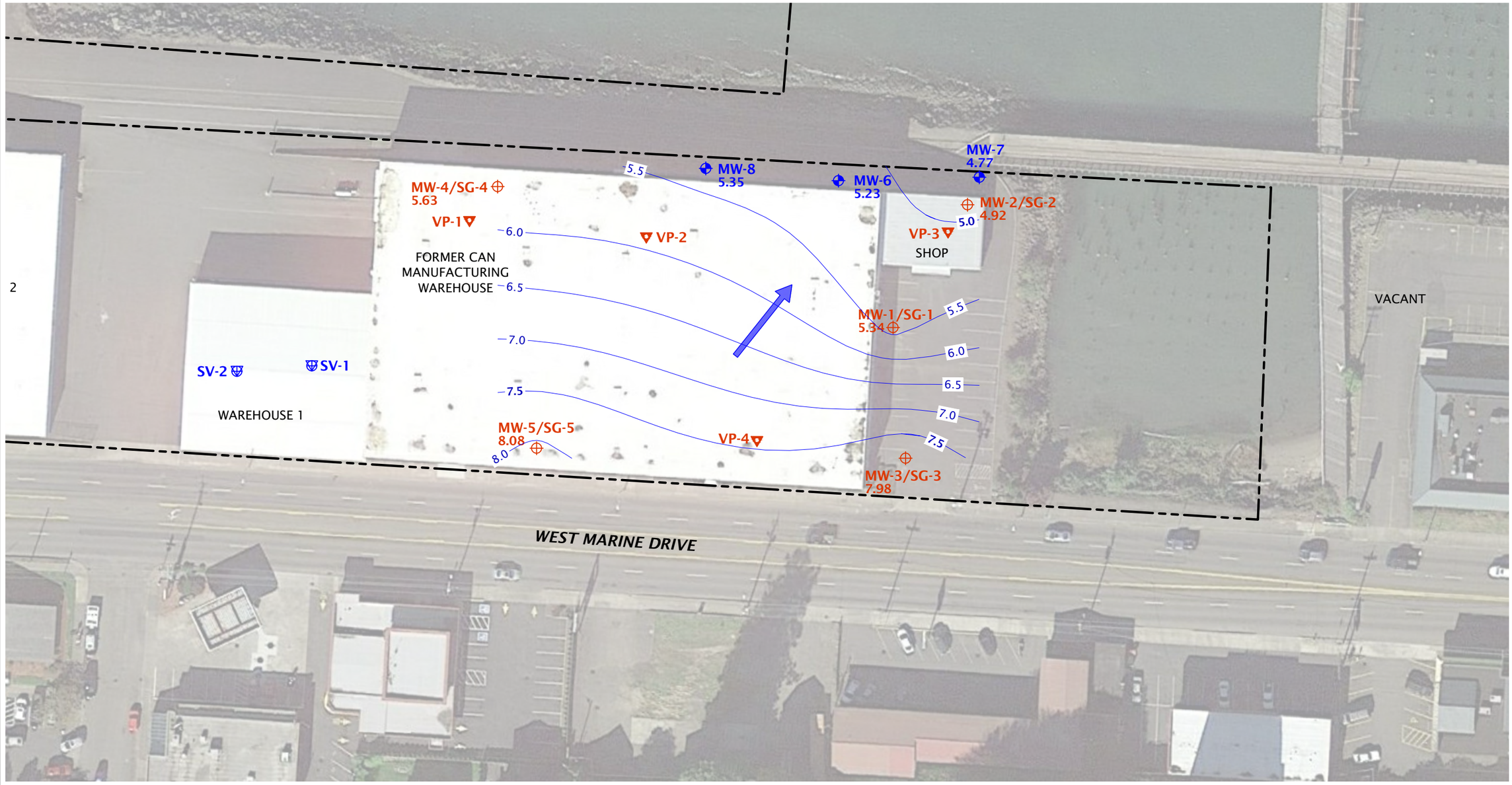
FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

SEPTEMBER 2023

NV5

Printed By: Mike.Miller | Print Date: 9/6/2023 3:10:20 PM
File Name: J:\A-D\BigBeams\BigBeams-1\BigBeams-1-04\BigBeams-1-04-05- Monitoring\Figures\CAD\PSMR\4th report\BigBeams-1-04-05-SP01.dwg | Layout: FIGURE 2



LEGEND:

- SUBJECT PROPERTY 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)
- 5.34 — GROUNDWATER ELEVATION IN FEET AS MEASURED ON JULY 25, 2023 (NAVD88 DATUM)
- 5.0 — GROUNDWATER ELEVATION CONTOUR AS MEASURED ON JULY 25, 2023 (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 - JULY 2023

FIGURE 3

FORMER ASTORIA WAREHOUSING SITE
ASTORIA, OR

BIGBEAMS-1-04-05

SEPTEMBER 2023

NV5

TABLES

TABLE 1
Summary of Sub-Slab Vapor Sample Chemical Analytical Results
Gasoline-Range Hydrocarbons and VOCs
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Sample I.D.	Sample Date	PID (ppm)	Gasoline-Range Hydrocarbons EPA Method TO-03/15 (µg/m³)	VOCs[1] EPA Method TO-15 (µg/m³)												
				Benzene	Ethylbenzene	iso-Propylbenzene	MTBE	Naphthalene	2-Propanol	Styrene	PCE	Toluene	TCE	1,2,4-TMB	1,3,5-TMB	m,p-Xylene	o-Xylene
VP-1	09/24/18	6.2	**18,000**	**79**	**360**	**30**	5.4 U	**43**	17 U	6.4 U	10 U	**6.4**	8.1 U	**690**	**150**	**640**	
	06/28/19	–	32,000 U	2.3 U	2.3 U	2.3 U	2.4 U	2.3 U	9.4 U	2.4 U	2.4 U	**4.9**	2.4 U	2.4 U	2.4 U	4.9 U	2.4 U
	12/17/20	0.2	500 U	3.9 U	5.3 U	6.0 U	18 U	–	**56**	5.2 U	8.3 U	4.6 U	6.6 U	6.0 U	6.0 U	5.3 U	5.3 U
	08/11/21	1.0	**2,610**	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**6.59**	0.851 U	1.36 U	1.88 U	1.07 U	**4.06**	**1.12**	**1.78**	0.867 U
	10/04/22[3]	0.5	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**21.8**	0.851 U	**1.78**	**4.18**	1.07 U	0.982 U	0.982 U	**2.43**	0.867 U
	01/27/23[4]	0.6	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**7.89**	0.851 U	1.36 U	1.88 U	**4.86**	0.982 U	0.982 U	1.73 U	0.867 U
	04/26/23[5]	0.0	260 U	2.1 U	2.8 U	3.2 U	9.3 U	–	6.3 U	2.7 U	4.4 U	4.9 U	3.5 U	3.2 U	3.2 U	5.6 U	2.8 U
	07/27/23[6]	4.6	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**36.1**	0.851 U	1.36 U	**4.29**	1.07 U	0.982 U	0.982 U	**1.76**	0.867 U
VP-2	09/24/18	2.8	**27,000**	**100**	**510**	**43**	5.1 U	**130**	17 U	6.0 U	9.6 U	**6.4**	7.6 U	**1,300**	**260**	**893**	
	06/28/19	–	33,000 U	2.4 U	2.4 U	2.4 U	2.4 U	2.3 U	**14**	2.4 U	2.4 U	**3.9**	2.4 U	2.4 U	2.4 U	5.0 U	2.4 U
	12/17/20	0.2	480 U	3.7 U	5.0 U	5.7 U	17 U	–	11 U	5.0 U	7.9 U	4.4 U	6.3 U	5.7 U	5.7 U	5.0 U	5.0 U
	08/11/21	1.2	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**5.97**	0.851 U	**2.59**	1.88 U	1.07 U	**2.80**	**1.01**	1.73 U	0.867 U
	10/04/22[3]	0.6	826 U	0.639 U	**1.96**	0.983 U	0.721 U	3.30 U	**27.5**	0.851 U	**1.53**	**5.35**	1.07 U	**4.17**	**1.05**	**9.32**	**3.31**
	01/27/23[4]	2.6	826 U	0.639 U	0.867 U	0.983 U	0.721 U	3.30 U	**9.29**	0.851 U	**2.34**	1.88 U	**4.67**	0.982 U	0.982 U	1.73 U	0.867 U
	04/26/23[5]	0.1	270 U	2.1 U	2.9 U	3.3 U	9.7 U	–	6.6 U	2.8 U	**16**	5.0 U	3.6 U	3.3 U	3.3 U	5.8 U	2.9 U
	07/27/23[6]	2.9	826 U	0.639 U	**1.29**	0.983 U	0.721 U	3.30 U	**25.8**	0.851 U	1.36 U	**3.39**	1.07 U	**1.75**	0.982 U	**3.59**	**1.17**
VP-3	09/24/18	–	**61,000,000**	**650,000**	**210,000**	7,500 U	5,500 U	32,000 U	3.9 U	1.3 U	10,000 U	**5,800** CN, J	8,200 U	**20,000**	**11,000**	**267,000**	
	06/28/19	–	**58,000,000**	**530,000**	**67,000**	9,500 U	9,700 U	9,100 U	38,000 U	9,500 U	9,500 U	9,500 U	9,500 U	**13,000**	9,500 U	**120,000**	9,500 U
	12/17/20	873	**57,000,000**	**470,000**	**210,000**	**5,900**	2,300 U	–	6,400 U	2,800 U	4,400 U	**2,700**	3,500 U	**62,000**	**25,000**	**240,000**	**4,400**
	08/11/21	3.6	**24,400**	**130**	**67.6**	**10.2**	0.721 U	3.30 U	3.07 U	0.851 U	1.36 U	**3.44**	1.07 U	**395**	**154**	**156**	**6.46**
	10/04/22[3]	4.1	**8,300**	**6.13**	**5.29**	0.983 U	0.721 U	3.30 U	**11.4**	0.851 U	1.36 U	**7.31**	1.07 U	**8.00**	**4.46**	**14.4**	**2.39**
	01/27/23[4]	4.9	**1,600**	**0.760**	0.867 U	0.983 U	**1.83**	3.30 U	**69.8**	0.851 U	1.36 U	1.88 U	1.07 U	0.982 U	0.982 U	1.73 U	0.867 U
	04/26/23[5]	0.5	**1,100**	2.2 U	3.0 U	3.4 U	10 U	–	6.8 U	3.0 U	4.7 U	5.2 U	3.7 U	3.4 U	3.4 U	6.0 U	3.0 U
	07/27/23[6]	0.8	826 U	**1.03**	0.867 U	0.983 U	**1.11**	3.30 U	**31.5**	0.851 U	1.36 U	**2.81**	1.07 U	0.982 U	0.982 U	**1.96**	0.867 U
VP-4	09/24/18	235.0	**4,900,000**	**1,800**	**1,600**	380 U	280 U	1,600 U	750 U	320 U	520 U	290 U	410 U	**920**	**470**	**1,400**	
	06/28/19	–	**1,200,000**	130 U	130 U	130 U	130 U	130 U	520 U	130 U	130 U	130 U	130 U	130 U	130 U	270 U	130 U
	12/17/20	385.0	**6,100,000**	830 U	1,100 U	1,300 U	940 U	–	2,600 U	1,100 U	1,800 U	980 U	1,400 U	1,300 U	1,300 U	1,100 U	1,100 U
	08/11/21	3.4	**6,570**	**1.70**	0.867 U	0.983 U	**8.25**	3.30 U	**6.00**	0.851 U	**2.18**	1.88 U	1.07 U	**6.48**	**1.84**	1.73 U	0.867 U
	10/04/22[3]	1.9	826 U	0.639 U	**0.984**	0.983 U	0.721 U	3.30 U	**15.0**	0.851 U	1.36 U	**2.16**	1.07 U	**2.41**	0.98 U	**4.47**	**1.60**
	01/27/23[4]	5.9	826 U	0.639 U	0.867 U	0.983 U	**1.99**	3.30 U	**8.14**	0.851 U	**6.42**	1.88 U	1.07 U	0.982 U	0.982 U	1.73 U	0.867 U
	04/26/23[5]	9.7	280 U	2.2 U	3.0 U	3.3 U	9.8 U	–	6.7 U	2.9 U	**900**	5.1 U	**5.2**	3.3 U	3.3 U	5.9 U	3.0 U
	07/27/23[6]	4.1	16,500 U	12.8 U	17.3 U	19.7 U	14.4 U	66.0 U	**3,960**	17.0 U	27.2 U	37.7 U	21.4 U	19.6 U	19.6 U	34.7 U	17.3 U
DEQ Generic RBCs[2]																	
Vapor Intrusion into Buildings																	
Occupational			1,700,000	1,600	4,900	1,800,000	47,000	360	NE	4,400,000	47,000	21,900,000	2,900	260,000	260,000	440,000	
DEQ Generic RBCs (Amended)[2]																	
Soil Vapor/Sub-Slab Vapor Concentrations																	
Commercial Worker (Chronic)			40,000	52	160	150,000	1,600	12	29,000	150,000	1,600	730,000	100	8,800	8,800	15,000	15,000

Notes:
1. Only VOCs detected with regulatory screening values (DEQ's May 2018 RBCs) are listed. For a complete listing of VOCs, refer to the laboratory report in Attachment B.
2. DEQ Generic RBCs dated May 2018. DEQ amended the RBCs in June 2023 in conjunction with development of new vapor intrusion guidance, but it has not been determined if the new RBCs shall apply to this site. The updated RBCs are provided for reference purposes only.
3. First round of pilot shutdown monitoring (October 2022)
4. Second round of pilot shutdown monitoring (January 2023)
5. Third round of pilot shutdown monitoring (April 2023)
6. Fourth round of pilot shutdown monitoring (July 2023)

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.
U: Not detected. Reporting or detection limit shown.
Bolding indicates analyte detection.
Shading indicates analyte detection at a concentration greater than DEQ RBCs (May 2018 values).
–: not analyzed

TABLE 2
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	10.21	6.24	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
					12/18/20	9.86	6.59	No
					12/18/20	9.90	6.55	No
					12/18/20	9.85	6.60	No
					01/15/21	8.94	7.51	No
					02/11/21	10.05	6.40	No
					03/02/21	9.46	6.99	No
					04/01/21	8.94	7.51	No
					05/04/21	10.90	5.55	No
					08/10/21	10.95	5.50	No
					08/11/21	10.89	5.56	No
					01/04/22	9.05	7.40	No
					10/03/22	10.90	5.55	No
					01/25/23	9.85	6.60	No
					04/27/23	10.35	6.10	No
					07/25/23	11.11	5.34	No
MW-2	17.78	-0.55	19	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
					02/19/20	12.06	5.72	No
					04/20/20	12.82	4.96	No
					04/28/20	12.40	5.38	No
					04/28/20	12.55	5.23	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
					12/18/20	11.21	6.57	No
					12/18/20	11.15	6.63	No
					12/18/20	11.11	6.67	No
					01/15/21	10.70	7.08	No
					02/11/21	11.49	6.29	No
					03/02/21	11.57	6.21	No
					04/01/21	12.45	5.33	No
					05/04/21	12.82	4.96	No
					08/10/21	12.91	4.87	No
					08/11/21	12.28	5.50	No
					01/04/22	10.75	7.03	No
					10/03/22	12.50	5.28	No
					01/25/23	12.00	5.78	No
					04/27/23	12.30	5.48	No
					07/25/23	12.86	4.92	No

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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
					02/19/20	7.50	9.20	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
					12/18/20	7.65	9.05	No
					12/18/20	7.60	9.10	No
					12/18/20	7.60	9.10	No
					01/15/21	7.21	9.49	No
					02/11/21	7.54	9.16	No
					03/02/21	7.49	9.21	No
					04/01/21	7.78	8.92	No
					05/04/21	8.28	8.42	No
					08/10/21	8.87	7.83	No
					08/11/21	8.85	7.85	No
					01/04/22	7.10	9.60	No
					10/03/22	8.80	7.90	No
					01/25/23	7.56	9.14	No
					04/27/23	7.50	9.20	No
					07/25/23	8.72	7.98	No
MW-4	17.7	-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
					02/19/20	10.99	6.71	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
					12/18/20	11.06	6.64	No
					12/18/20	10.97	6.73	No
					12/18/20	10.90	6.80	No
					01/15/21	10.09	7.61	No
					02/11/21	10.81	6.89	No
					03/02/21	8.68	9.02	No
					04/01/21	11.45	6.25	No
					05/04/21	11.85	5.85	No
					08/10/21	12.10	5.60	No
					08/11/21	12.10	5.60	No
					01/04/22	10.10	7.60	No
					10/03/22	12.00	5.70	No
					01/25/23	10.70	7.00	No
					04/27/23	11.20	6.50	No
					07/25/23	12.07	5.63	No

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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
					02/19/20	8.48	9.49	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
					12/18/20	9.10	8.87	No
					12/18/20	9.06	8.91	No
					12/18/20	9.04	8.93	No
					01/15/21	8.26	9.71	No
					02/11/21	8.62	9.35	No
					03/02/21	11.05	6.92	No
					04/01/21	8.26	9.71	No
					05/04/21	9.39	8.58	No
					08/10/21	10.08	7.89	No
					08/11/21	10.06	7.91	No
					01/04/22	8.40	9.57	No
					10/03/22	10.70	7.27	No
					01/25/23	8.60	9.37	No
					04/27/23	8.60	9.37	No
					07/25/23	9.89	8.08	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
					12/18/20	10.45	6.69	No
					12/18/20	10.45	6.69	No
					12/18/20	10.41	6.73	No
					01/15/21	9.64	7.50	No
					02/11/21	10.72	6.42	No
					03/02/21	10.91	6.23	No
					04/01/21	11.37	5.77	No
					05/04/21	11.75	5.39	No
					08/10/21	11.71	5.43	No
					08/11/21	11.65	5.49	No
					01/04/22	9.70	7.44	No
					10/03/22	11.70	5.44	No
					01/25/23	10.65	6.49	No
					04/27/23	11.20	5.94	No
					07/25/23	11.91	5.23	No

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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
					12/18/20	9.64	6.77	No
					12/18/20	9.41	7.00	No
					01/15/21	8.90	7.51	No
					02/11/21	9.89	6.52	No
					03/02/21	8.92	7.49	No
							16.41	
					04/01/21	11.23	5.18	No
					05/04/21	11.74	4.67	No
					08/10/21	11.28	5.13	No
					08/11/21	10.80	5.61	No
					01/04/22	9.30	7.11	No
					10/03/22	11.25	5.16	No
					01/25/23	10.86	5.55	No
					04/27/23	11.10	5.31	No
					07/25/23	11.64	4.77	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	10.95	5.67	**0.02**
					04/28/20	11.03	5.59	No
					06/10/20	10.40	6.22	No
					06/25/20	10.45	6.17	No
					08/25/20	11.25	5.37	**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
					12/18/20	10.21	6.41	No
					12/18/20	9.88	6.74	No
					12/18/20	9.86	6.76	No
					01/15/21	8.94	7.68	No
					02/11/21	10.10	6.52	No
					03/02/21	10.31	6.31	No
					04/01/21	11.85	4.77	No
					05/04/21	11.18	5.44	No
					08/10/21	11.15	5.47	No
					01/04/22	9.10	7.52	No
					10/03/22	10.10	6.52	No
					01/25/23	9.95	6.67	No
					04/27/23	10.60	6.02	No
					07/25/23	11.27	5.35	No

TABLE 2
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
					12/18/20	11.47		No
					01/15/21	10.89		No
					02/11/21	11.86		No
					03/02/21	11.65		No
					04/01/21	12.35		No
					05/04/21	12.62		No
					08/10/21	12.55		No
					01/04/22	10.56		No
					01/25/23	11.70		No
					04/27/23	12.10		No
					07/25/23	12.85		No
0AS-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
					04/28/20	12.50		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
					12/18/20	11.55		No
					12/18/20	11.50		No
					01/15/21	10.91		No
					02/11/21	11.87		No
					03/02/21	11.68		No
					04/01/21	12.31		No
					05/04/21	12.59		No
					08/10/21	12.55		No
					01/04/22	10.61		No
					01/25/23	11.73		No
					04/27/23	12.20		No
					07/25/23	12.86		No
0AS-2	NM	NM	19.58	10 – 20	12/11/19	12.31	NM	No
					04/20/20	12.60		**0.21**
					04/28/20	12.35		No
					04/28/20	12.46		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
					12/18/20	11.48		No
					12/18/20	11.49		No
					01/15/21	10.89		No
					02/11/21	11.86		No
					03/02/21	11.68		No
					04/01/21	12.30		No
					05/04/21	12.59		No
					08/10/21	12.47		No
					01/04/22	10.53		No
					01/25/23	11.73		No
					04/27/23	12.20		No
					07/25/23	12.85		No

TABLE 2
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	12.47		**0.71**
					04/28/20	12.46		**0.49**
					04/28/20	12.61		No
					06/10/20	12.24		No
					06/29/20	12.65		**0.21**
					08/25/20	12.62		No
					08/26/20	12.78		No
					12/17/20	11.45		**0.25**
					12/18/20	11.90		No
					12/18/20	11.76		No
					12/18/20	11.61		No
					12/18/20	11.55		No
					01/15/21	10.96		No
					02/11/21	12.00		No
					03/02/21	11.80		No
					04/01/21	12.50		No
					05/04/21	12.75		No
					08/10/21	12.63		No
					01/04/22	10.70		No
					01/25/23	11.95		No
					04/27/23	12.40		No
					07/25/23	13.01		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
					04/28/20	12.71		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
					12/18/20	11.61		No
					12/18/20	11.60		No
					01/15/21	11.00		No
					02/11/21	12.05		No
					03/02/21	11.92		No
					04/01/21	12.65		No
					05/04/21	12.89		No
					08/10/21	12.70		No
					01/04/22	10.56		No
					01/25/23	12.05		No
					04/27/23	12.50		No
					07/25/23	13.10		No

Notes:
Vertical datum is NAVD88.

TABLE 3
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	--
	08/11/21	63.2	0.18	6.58	-145.4	1,091	3.11	--
	01/04/22[1]	60.4	2.80	5.40	-95.0	1,900	--	--
	10/03/22	61.7	3.45	6.31	-119.5	970	2.40	--
	01/25/23	58.8	0.51	6.24	-59.0	697	53.0[2]	--
	04/28/23	59.6	0.55	7.61	-105.9	513	26.2	--
	07/26/23	61.2	0.53	6.36	-178.4	522	3.81	--
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	--
	08/11/21	64.3	0.15	6.51	-128.4	1,208	1.98	--
	01/05/22[1]	62.2	1.68	6.14	-131.1	1,760	--	--
	10/03/22	61.8	1.42	6.50	-145.5	1,279	2.70	--
	01/26/23	58.2	0.53	6.59	-105.0	802	35.2[2]	--
	04/27/23	59.5	0.73	9.36[3]	-57.8	547	0.1	--
	07/25/23	60.3	0.34	6.25	-188.5	563	0.39	--
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	--
	08/11/21	62.1	0.28	6.73	-101.9	924	1.85	--
	01/04/22[1]	57.9	3.10	6.20	-75.0	1,158	--	--
	10/03/22	--	--	--	--	--	--	--
	01/25/23	57.4	0.95	6.80	-77.0	467	209[2]	--
	04/27/23	55.0	0.99	9.55[3]	-87.9	401	45.4	--
	07/25/23	59.9	0.44	6.30	-168.1	414	53.4	--
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	--
	08/11/21	58.7	0.21	6.48	-121.4	831	4.67	--
	01/05/22[1]	57.1	2.29	5.67	-74.4	906	--	--
	10/03/22	--	--	--	--	--	--	--
	01/26/23	55.0	0.42	6.33	-47.0	720	351[2]	--
	04/28/23	56.1	0.97	7.94	-78.0	476	15.3	--
	07/26/23	56.7	0.56	6.44	-182.4	432	14.5	--
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	--
	08/11/21	61.4	0.39	6.51	-95.1	548	3.02	--
	01/04/22[1]	47.0	18.60	5.30	-26.5	12	--	--
	10/03/22	--	--	--	--	--	--	--
	01/26/23	57.7	0.41	6.63	-67.0	479	40.1[2]	--
	04/27/23	56.6	1.59	9.01[3]	-106.2	293	0.1	--
	07/25/23	58.7	0.47	5.85	-195.2	290	0.47	--
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	--
	08/11/21	61.0	0.21	6.50	-119.6	1,084	2.07	--
	01/04/22[1]	58.5	2.10	5.10	-23.4	1,997	--	--
	10/03/22	59.1	1.17	6.30	-119.2	940	2.80	--
	01/26/23	55.8	0.42	6.55	-95.0	854	36.1[2]	--
	04/27/23	56.0	0.65	8.58[3]	-71.0	499	0.10	--
	07/26/23	57.1	0.43	6.25	-187.1	542	3.42	--
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	--
	08/11/21	62.1	0.28	6.53	-134.6	1,329	1.47	--
	01/04/22[1]	57.6	1.29	5.00	-57.8	4,740	--	--
	10/04/22	62.9	0.61	6.49	-119.9	1,072	3.70	--
	01/25/23	55.7	0.74	6.46	-80.0	2,070	110[2]	--
	04/28/23	58.9	0.61	8.79[3]	-77.3	647	31.7	--
	07/26/23	62.5	0.36	6.43	-182.9	640	57.0	--
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	--
	08/11/21	59.5	0.14	6.4	-123.2	926	2.52	--
	01/04/22[1]	58.0	4.00	4.80	-19.5	2,020	--	--
	10/04/22	58.4	0.68	6.39	-111.1	939	3.60	--
	01/26/23	54.0	0.53	6.32	-41.0	677	231[2]	--
	04/28/23	55.4	0.48	7.41	-105.7	443	8.16	--
	07/27/23	57.1	0.57	6.93	-183.1	479	1.97	--
PAS-2	12/07/19	59.9	0.38	6.86	-109.0	577	0.77	--

TABLE 3
Summary of Groundwater Parameters in Monitoring Well Samples
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Notes:
1. Groundwater parameters measured during the January 2022 groundwater monitoring event indicate a possible malfunction of the YSI field meter and are therefore not necessarily considered representative of actual groundwater parameters. Parameters measured during this event were evaluated as relative values in the field to assess stabilization prior to sample collection only.

2. Turbidity observations during the January 2023 groundwater monitoring event indicate that the (rented) multi-parameter equipment retained residual solids within the flow cell from the onset of purging. Therefore, the noted turbidity values are not necessarily considered representative of actual groundwater parameters at the time of sample collection. Turbidity values measured during this event were evaluated as relative values in the field to assess stabilization prior to sample collection only.

3. pH observations during the April 2023 groundwater monitoring event indicate that the multi-parameter equipment may have been reading values higher than actual groundwater conditions. pH values measured during this event were evaluated as relative values in the field to assess stabilization prior to sample collection only.

--: not analyzed

TABLE 4
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)	VOCs EPA Methods 8260B/8260D (µg/L)																					
			Benzene	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	1,2-Dibromoethane	1,2-Dichloroethane	cis-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	P-Isopropyltoluene	MTBE	Naphthalene	n-Propylbenzene	Styrene	Toluene	TCE	1,2,3-TMB	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	0.500 U	0.500 U	0.500 U	--	1,090	98.4	7.60	11.5	397	83.1	0.500 U	25.1	--	--	54.5	40.6	196
	11/15/19	6,280	292	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	--	529	25.3	5.00 U	5.06	174	73.9	5.00 U	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	0.819 U	20.1	--	--	6.97 J	8.90 J	64.7
	08/11/21	12,700	663	--	--	--	10.0 U	10.0 U	--	1,780	74.1	--	7.40 J	505	247	10.0 U	15.3	--	--	10.0 U	6.37 J	37.5
	01/04/22	2,710	37.4	4.39	3.49	0.567 J	1.00 U	1.00 U	1.00 U	116	20.4	1.17	3.37 C3	51.0	60.8	1.00 U	2.15	1.00 U	40.4	0.396 J	0.914 J	7.19
	10/03/22[1]	18,200	486	–	–	–	1.26 U	0.819 U	--	1,870	141	–	1.01 U	521 C3	351	0.819 U	24.0	--	–	3.22 U	7.80 J	48.2
	01/25/23[2]	16,900	458	–	–	–	10.0 U	10.0 U	--	2,460	120	–	4.58 J	431 C3	334 C3	10.0 U	20.6	--	–	10.0 U	7.25 J	64.5
	04/28/23[3]	16,600	369	31.3 J	16.3 J	100 U	100 U	100 U	100 U	2,900	112	100 U	100 U	816	379	100 U	100 U	100 U	459	100 U	10.9 J	97.7 J
	07/26/23[4]	21,200	533	27.8	21.4	20 U	20 U	20 U	20 U	3,950	198	4.22 J	7.62 J	1,050 C3	524	20 U	26.4	20 U	656	74.9	32.8	116
MW-2	10/03/18	34,500	2,320	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	--	1,690	89.6	21.7	26.0	465	277	5.00 U	52.3	--	--	1,650	370	3,180
	11/15/19	7,000	416	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	--	290	36.3	10.0 U	14.1	80.7	72.0	10.0 U	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	0.0819 U	9.56	--	--	72.4	51.2	347
	08/11/21	2,580	119	--	--	--	10.0 U	10.0 U	--	12.0	37.1	--	12.0	33.1 J	68.3	10.0 U	4.81 J	--	--	10.0 U	10.9	15.1 J
	01/04/22	2,720	134	4.36	3.92	1.00 U	1.00 U	1.00 U	1.00 U	53.5	32.8	0.640 J	7.53 C3	17.5	76.6	1.00 U	7.58	1.00 U	16.8	14.6	15.8	40.9
	10/03/22[1]	3,720	184	–	–	–	1.26 U	0.819 U	--	60.5	29.1	–	11.7	19.1 C3, J	–	0.819 U	10.3	--	–	59.8	30.9	44.8
	01/26/23[2]	3,810 B	129	–	–	–	10.0 U	10.0 U	--	51.6	27.0	–	9.44 J	42.0 C3, J	53.1 C3	10.0 U	9.63 J	--	–	21.3	17.3	22.0 J
	04/27/23[3]	4,420	177	5.68 J	3.81 J	10.0 U	10.0 U	10.0 U	10.0 U	41.9	25.3	10.0 U	7.99 J	27.2 J	47.0	10.0 U	8.69 J	10.0 U	29.1	6.70 J	12.4	16.3 J
	07/25/23[4]	2,350	226	7.15	4.59	0.753 J	1.00 U	1.00 U	1.00 U	87.7	34.2	0.718 J	7.15	46.8 C3	61.8	1.00 U	9.88	1.00 U	59.6	14.2	22.1	34.2
MW-3	10/03/18	148 B, J	0.500 U	0.500 U	0.500 U	0.500 U	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	0.500 U	1.50 U
	11/15/19	370	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	--	1.00 U	4.19	1.00 U	6.68	5.00 U	1.23	1.00 U	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	1.00 U	0.643 J	--	--	0.742 J	1.67	2.99 J
	08/11/21	603	1.00 U	--	--	--	1.00 U	1.00 U	--	1.00 U	11.4	--	9.01	5.00 U	17.6	1.00 U	0.716 J	--	--	1.00 U	0.256 J	1.60 J
	01/04/22	224	0.218 J	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	0.364 J	0.311 J	0.308 J	1.00 U	1.15 C3	1.77 J, B	0.550 J	1.00 U	1.00 U	1.00 U	0.360 J	1.00 U	0.212 J	0.662 J
	10/03/22[1]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	01/25/23[2]	1,400 B	1.00 U	–	–	–	1.00 U	1.00 U	–	1.00 U	0.122 J	–	1.27	5.00 U, C3	1.00 U, C3	1.00 U	1.00 U	–	–	1.00 U	1.00 U	0.190 J
	04/27/23[3]	502	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.57	4.02	1.00 U	1.39	5.00 U	0.984 J	1.00 U	0.626 J	1.00 U	0.682 J	1.00 U	1.00 U	1.44 J
	07/25/23[4]	143	1.00 U	1.00 U	0.25 J	1.00 U	1.00 U	1.00 U	1.00 U	2.23	1.00 U	2.22	5.00 U	4.33	1.00 U	1.00 U	4.00	0.392 J	1.00 U	0.195 J	0.48 J
MW-4	10/03/18	6,080	133	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	--	168	18.7	3.99	6.45	33.0	65.0	0.500 U	82.1	--	--	167	56.1	757
	11/15/19	10,600	561	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	--	493	30.5	25.0 U	25.0 U	133	80.3	25.0 U	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	1.64 U	138	--	--	660	179	3,420
	08/11/21	10,500	634	--	--	--	20.0 U	20.0 U	--	991	51.2	--	2.82 J	306	150	20.0 U	40.1	--	--	569	90.8	1,220
	01/04/22	21,200	289	4.09 J	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	206	27.1	11.2	3.70 C3, J	179	74.5	10.0 U	43.8	10.0 U	381	805	238	3,880
	10/03/22[1]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	01/26/23[2]	38,000	1,180	–	–	–	20.0 U	20.0 U	–	750	46.0	–	20.0 U	169 C3	115 C3	20.0 U	119	–	–	1,350	384	9,260
	04/28/23[3]	21,500	822	9.07 J	8.66 J	20.0 U	20.0 U	20.0 U	20.0 U	858	72.5	11.5 J	20.0 U	393	202	20.0 U	69.9	20.0 U	471	1,050	253	3,950
	07/26/23[4]	16,000	465	19.5	13.0	1.04	1.00 U	1.00 U	1.00 U	1,220	120	4.66	2.22	450 C3	290	1.00 U	70.0	1.00 U	469	489	65.3	1,320
MW-5	10/03/18	6,010	167	0.500 U	14.3	0.500 U	0.500 U	0.500 U	--	88.2	49.0	2.25	0.500 U	14.9	184	0.500 U	9.37	--	--	16.0	5.84	16.0
	11/15/19	3,420	83.5	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	--	48.2	23.8	10.0 U	10.0 U	50.0 U	79.8	10.0 U	10.0 U	--	--	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	0.0819 U	7.79	--	--	5.86	3.37	13.0
	08/11/21	4,870	55.8	--	--	--	1.00 U	1.00 U	--	170	53.0	--	1.00 U	51.5	197	1.00 U	9.94	--	--	1.15	2.13	16.5
	01/04/22	1,800	3.52	11.8	12.8	0.308 J	1.00 U	1.00 U	1.00 U	2.40	12.1	1.16	9.40 C3	1.19 J, B	52.6	1.00 U	0.685 J	1.00 U	0.873 J	1.00 U	0.615 J	2.07 J
	10/03/22[1]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	01/26/23[2]	1,580	1.70	–	–	–	1.00 U	1.00 U	–	2.53	10.6	–	9.42	5.00 U, C3	37.7 C3	1.00 U	1.00 U	–	–	1.00 U	0.511 J	1.73 J
	04/27/23[3]	2,670	2.29	19.5	14.2	0.483 J	1.00 U	1.00 U	1.00 U	17.5	16.0	1.54	5.59	7.59	76.8	1.00 U	1.09	1.00 U	4.02	0.341 J	0.538 J	2.64 J
	07/25/23[4]	2,390 Q	24.5	21.1	17.0	0.644 J	1.00 U	1.00 U	1.00 U	151	43.6	1.00 U	1.94	21.0 C3	122	1.00 U	8.16	1.00 U	15.9	1.53	1.41	14.4
MW-6	12/07/19	23,700	796	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	--	1,980	129	18.0	12.8	268	345	10.0 U	71.7	--	--	926	273	2,390
	06/25/20	72,200	681	--	--	--	0.6 U	0.4 U	--	459	78.8	--	16.8	102	171	0.4 U	37.5	--	--	258	94.5	582
	08/11/21	4,340	380	--	--	--	5.00 U	5.00 U	--	71.4	26.7	--	16.0	30.2	72.6	5.00 U	32.0	--	--	38.6	20.7	55.6
	01/04/22	1,670	169	1.65	1.51	1.00 U	1.00 U	1.00 U	1.00 U	26.0	11.1	0.466 J	7.85 C3	8.96 B	31.5	1.00 U	8.31	1.00 U	23.8	12.2	9.66	21.4
	10/03/22[1]	2,930	96.7	–	–	–	0.630 U	0.409 U	--	90.8	22.2	–	19.9	18.8 C3, J	41.6	0.409 U	7.21	--	–	18.1	19.7	49.5
	01/26/23[2]	4,860	363	–	–	–	5.00 U	5.00 U	--	166	32.4	–	6.60	33.0 C3	73.1 C3	5.00 U	15.6	--	–	32.7	33.9	88.4
	04/27/23[3]	3,720	276	4.15 J	3.34 J	5.00 U	5.00 U	5.00 U	5.00 U	139	22.3	0.620 J	9.60	47.5	65.9	5.00 U	6.44	5.00 U	57.1	31.3	30.0	65.1
	07/26/23[4]	1,740	146	4.62	3.37	0.608 J	1.00 U	1.00 U	1.00 U	131	25.0	0.820 J	15.0	49.3 C3	58.2	1.00 U	5.46	1.00 U	65.4	20.2	32.2	53.9
MW-7	12/07/19	5,920	151	1.00 U	7.96	1.00 U	1.00 U	1.00 U	--	216	59.7	5.34	9.97	113	168	1.00 U	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	0.409 U	15.4	--	--	11.6	96.8	207
	08/11/21	5,180	170	--	--	--	5.00 U	5.00 U	--	102	95.9	--	13.2	47.8	227	5.00 U	16.8	--	--	5.00 U	16.1	24.5
	01/04/22	3,060	178	5.43	5.71	0.552 J	1.00 U	1.00 U	1.00 U	70.3	42.8	0.755 J	2.75 C3	9.7 B	202	1.00 U	6.26	1.00 U	23.0	0.437 J	3.00	12.8
	10/04/22[1]	5,470	69.5	–	–	–	0.630 U	0.409 U	--	37.0	56.0	–	4.70 J	26.5 C3	125	0.409 U	6.09	--	–	1.61 U	4.260 J	17.6
	01/25/23[2]	10,600	887	–	–	–	5.00 U	5.00 U	--	729	124	–	6.83	63.5 C3	317 C3	5.00 U	30.1	--	–	14.1	11.1	167
	04/28/23[3]	10,600	357	19.8	14.8	1.46 J	5.00 U	5.00 U	5.00 U	227	148	1.89 J	7.07	16.3 J	465	5.00 U	24.5	5.00 U	28.9	6.36	13.4	62.0
	07/26/23[4]	6,140	235	20.3	16.3	1.31	1.00 U	1.00 U	1.00 U	82.5	166	0.871 J	7.33	18.0 C3	347	1.00 U	23.7	1.00 U	35.4	12.2	6.28	71.6
MW-8	12/07/19	8,290	1,520	1.00 U	8.68	1.00 U	1.00 U	1.00 U	--	263	80.6	6.17	8.35	95.5	199	1.00 U	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	2.05 U	91.4	--	--	1,310	441	5,020
	08/11/21	15,700	1,560	--	--	--	25.0 U	25.0 U	--	408	77.5	--	6.73 J	214	225	25.0 U	42.2	--	--	1,000	313	1,560
	01/04/22	17,200	2,750	10.5	7.92	1.00 U	1.00 U	1.00 U	1.00 U	408	64.0	15.5	7.41 C3	163	326	1.00 U	30.0	1.00 U	444	1,320	196	1,620
	10/04/22[1]	16,000	1,490	--	--	--	3.15 U	2.05 U	--	465	68.8	--	2.53 U	172 C3	197	2.05 U	25.40	--	--	989	296	1,530
	01/26/23[2]	34,500	1,250	--	--	--	25.0 U	25.0 U	--	1,020	95.1	--	4.12 J	231 C3	233 C3	25.0 U	45.9	--	--	2,210	582	4,370
	04/28/23[3]	28,300	1,770	25.2	18.5 J	25.0 U	25.0 U	25.0 U	25.0 U	961	96.6	37.3	3.67 J	504	273	25.0 U	41.9	25.0 U	695	2,570	681	3,690
	07/27/23[4]	16,200	1,970 Q	21.4	15.5	0.971 J	1.00 U	1.00 U	1.00 U	590	115	6.63	6.81	294 C3	261	0.648 J	50.5	1.00 U	374	1,150 Q	343	1,430
PAS-2	12/07/19	8,160	102	124	7.07	1.22	1.00 U	1.00 U	--	122	109	1.00 U	10.4	13.9	163	1.00 U	16.0	--	--	10.0 U	28.8	49.0
DEQ Generic RBCs[5]																						
Volatilization to Outdoor Air																						
Occupational		>S	14,000	NE	NE	NE	790	9,000	>S	43,000	>S	NE	1,500,000	16,000	NE	>S	>S	20,000	NE	>S	>S	>S
Vapor Intrusion into Buildings																						
Occupational		>S	2,800	NE	NE	NE	590	3,900	>S	8,200	>S	NE	870,000	11,000	NE	>S	>S	3,700	NE	>S	>S	>S
Groundwater in Excavation																						
Construction/Excavation Worker		14,000	1,800	NE	NE	NE	27	630	18,000	4,500	51,000	NE	63,000	500	NE	170,000	220,000	430	NE	6,300	7,500	23,000
DEQ Generic RBCs (Amended)[6]																						
Target Groundwater Concentrations (Vapor Intrusion)																						
Commercial Worker (Chronic)		520	12	NE	NE	NE	1.5	18	1,800	31	22,000	NE	3,200	50	22,000	84,000	150,000	13	4,100	2,400	1,700	3,300

TABLE 4
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

Notes:
1. First round of pilot shutdown monitoring (October 2022)
2. Second round of pilot shutdown monitoring (January 2023)
3. Third round of pilot shutdown monitoring (April 2023)
4. Fourth round of pilot shutdown monitoring (July 2023)
5. DEQ Generic RBCs dated May 2018. DEQ amended the RBCs in June 2023 in conjunction with development of new vapor intrusion guidance, but it has not been determined if the new RBCs shall apply to this site. The updated RBCs are provided for reference

B: The same analyte is found in the associated blank.
C3: The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
J: The result is an estimated quantity.
Q: Sample was prepared and/or analyzed one day past holding time as defined in this method. Concentrations should be considered biased low.
>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 (May 2018 values).
--: not analyzed

TABLE 5
Summary of Air Sample Chemical Analytical Results
VOCs
Former Astoria Warehousing Site
70 West Marine Drive
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	06/29/19 to 07/13/19	**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**
	11/06/19 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**
	08/12/21 to 08/26/21	**0.37**	–	**0.34**	**0.86**	0.098 U	0.065 U	**0.60**	–	–	**0.20**	0.084 U	**1.2**	0.072 U	–	–	**2.3**	**0.86**
	10/04/22 to 10/18/22	**0.42**	–	**0.24**	**0.68**	0.098 U	0.065 U	**0.59**	–	–	**0.22**	0.085 U	**1.7**	0.072 U	–	–	**2.0**	**0.94**
	01/27/23 to 02/10/23	**0.81**	–	**0.37**	**1.3**	0.098 U	0.065 U	**0.42**	–	–	**0.18**	0.084 U	**1.6**	0.072 U	–	–	**1.3**	**0.61**
	04/26/23 to 05/10/23	0.25 U	–	**0.32**	**0.64**	0.098 U	0.065 U	**0.24**	–	–	0.082 U	0.085 U	**0.65**	0.072 U	–	–	**0.77**	**0.36**
	07/27/23 to 08/10/23	**0.29**	–	**0.28**	**0.45**	0.099 U	0.066 U	**0.25**	–	–	**0.090**	0.086 U	**0.54**	0.073 U	–	–	**0.86**	**0.38**
Indoor-2	06/29/19 to 07/13/19	**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**
	11/06/19 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**
	08/12/21 to 08/26/21	**0.33** J	–	**0.29** J	**0.73** J	0.098 U	0.065 U	**0.47** J	–	–	**0.17** J	0.084 U	**1.2** J	0.072 U	–	–	**1.7** J	**0.64** J
	10/04/22 to 10/18/22	**0.46**	–	**0.28**	**0.71**	0.098 U	0.065 U	**0.50**	–	–	**0.19**	0.085 U	**1.5**	0.072 U	–	–	**1.6**	**0.76**
	01/27/23 to 02/10/23	**0.78**	–	**0.34**	**1.2**	0.098 U	0.065 U	**0.36**	–	–	**0.15**	0.084 U	**1.6**	0.072 U	–	–	**1.1**	**0.54**
	04/26/23 to 05/10/23	0.25 U	–	**0.31**	**0.58**	0.098 U	0.065 U	**0.23**	–	–	0.082 U	0.085 U	**0.63**	0.072 U	–	–	**0.77**	**0.36**
	07/27/23 to 08/10/23	**0.30**	–	**0.30**	**0.46**	0.099 U	0.066 U	**0.23**	–	–	0.083 U	0.086 U	**0.52**	0.073 U	–	–	**0.81**	**0.34**
Indoor-3	06/29/19 to 07/13/19	**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**
	11/06/19 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**
	08/12/21 to 08/26/21	**0.32**	–	**0.22**	**0.65**	0.098 U	0.064 U	**0.57**	–	–	**0.20**	0.084 U	**1.2**	0.072 U	–	–	**2.2**	**0.77**
	10/04/22 to 10/18/22	**0.43**	–	**0.23**	**0.57**	0.098 U	0.065 U	**0.49**	–	–	**0.13**	0.085 U	**1.2**	0.072 U	–	–	**1.8**	**0.79**
	01/27/23 to 02/10/23	**0.68**	–	**0.23**	**0.78**	0.098 U	0.065 U	**0.34**	–	–	**0.12**	0.084 U	**1.1**	0.072 U	–	–	**1.2**	**0.49**
	04/26/23 to 05/10/23	**0.25**	–	**0.27**	**0.62**	0.098 U	0.065 U	**0.25**	–	–	0.082 U	0.085 U	**0.37**	0.072 U	–	–	**0.82**	**0.33**
	07/27/23 to 08/10/23	**0.29**	–	**0.20**	**0.41**	0.099 U	0.066 U	**0.21**	–	–	0.083 U	0.086 U	**0.49**	0.073 U	–	–	**0.74**	**0.32**
Indoor-4	06/29/19 to 07/13/19	**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**
	11/06/19 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**
	08/12/21 to 08/26/21	**0.31**	–	**0.17**	**0.44**	0.098 U	0.065 U	**0.56**	–	–	**0.20**	0.084 U	**1.3**	0.072 U	–	–	**2.2**	**0.76**
	10/04/22 to 10/18/22	**0.41**	–	**0.20**	**0.46**	0.098 U	0.065 U	**0.84**	–	–	**0.17**	0.085 U	**1.8**	0.072 U	–	–	**3.2**	**1.6**
	01/27/23 to 02/10/23	**0.73**	–	**0.23**	**0.71**	0.098 U	0.065 U	**0.87**	–	–	**0.30**	**0.13**	**2.2**	0.072 U	–	–	**3.4**	**1.8**
	04/26/23 to 05/10/23	**0.27**	–	**0.26**	**0.42**	0.098 U	0.065 U	**0.62**	–	–	**0.18**	0.085 U	**1.0**	0.072 U	–	–	**2.4**	**1.3**
	07/27/23 to 08/10/23	**0.35**	–	**0.24**	**0.34**	0.099 U	0.066 U	**0.70**	–	–	**0.13**	0.086 U	**0.96**	0.073 U	–	–	**2.9**	**1.6**
Indoor-5	06/29/19 to 07/13/19	**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**
	11/06/19 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**
	08/12/21 to 08/26/21	**0.32**	–	**0.27**	**0.61**	0.097 U	0.064 U	**0.64**	–	–	**0.22**	0.084 U	**1.5**	0.072 U	–	–	**2.6**	**0.88**
	10/04/22 to 10/18/22	**0.40**	–	**0.22**	**0.36**	0.098 U	0.065 U	**0.19**	–	–	0.082 U	0.085 U	**0.74**	0.072 U	–	–	**0.63**	**0.26**
	01/27/23 to 02/10/23	**0.76**	–	**0.27**	**0.72**	0.098 U	0.065 U	**0.23**	–	–	**0.14**	0.084 U	**1.1**	0.072 U	–	–	**0.74**	**0.33**
	04/26/23 to 05/10/23	**0.26**	–	**0.30**	**0.49**	0.098 U	0.065 U	**0.15**	–	–	0.082 U	0.085 U	**0.26**	0.072 U	–	–	**0.50**	**0.16**
	07/27/23 to 08/10/23	**0.31**	–	**0.20**	**0.45**	0.099 U	0.067 U	**0.14**	–	–	**0.13**	0.085 U	**0.37**	0.073 U	–	–	**0.46**	**0.20**

TABLE 5
Summary of Air Sample Chemical Analytical Results
VOCs
Former Astoria Warehousing Site
70 West Marine Drive
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-6	06/29/19 to 07/13/19	**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**
	11/06/19 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**
	08/12/21 to 08/26/21	**0.33**	–	**0.21**	**0.63**	0.098 U	0.065 U	**0.69**	–	–	**0.22**	0.084 U	**1.3**	0.072 U	–	–	**2.8**	**1.0**
	10/04/22 to 10/18/22	**0.40**	–	**0.22**	**0.58**	0.098 U	0.065 U	**0.27**	–	–	**0.10**	0.085 U	**0.76**	0.072 U	–	–	**0.94**	**0.42**
	01/27/23 to 02/10/23	**0.65**	–	**0.22**	**0.81**	0.098 U	0.065 U	**0.27**	–	–	**0.12**	0.084 U	**1.0**	0.072 U	–	–	**0.90**	**0.39**
	04/26/23 to 05/10/23	0.25 U	–	**0.24**	**0.55**	0.098 U	0.065 U	**0.14**	–	–	0.082 U	0.085 U	**0.26**	0.072 U	–	–	**0.47**	**0.19**
	07/27/23 to 08/10/23	**0.30**	–	**0.18**	**0.51**	0.099 U	0.066 U	**0.15**	–	–	**0.11**	0.085 U	**0.47**	0.073 U	–	–	**0.56**	**0.24**
Indoor-7	06/29/19 to 07/13/19	**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**
	11/06/19 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**
	08/12/21 to 08/26/21	**0.30**	–	**0.22**	**0.62**	0.098 U	0.065 U	**0.52**	–	–	**0.16**	0.084 U	**1.1**	0.072 U	–	–	**2.0**	**0.68**
	10/04/22 to 10/18/22	**0.39**	–	**0.20**	**0.50**	0.098 U	0.065 U	**0.41**	–	–	**0.10**	0.085 U	**1.0**	0.072 U	–	–	**1.5**	**0.64**
	01/27/23 to 02/10/23	**0.68**	–	**0.21**	**0.76**	0.098 U	0.065 U	**0.31**	–	–	**0.12**	0.084 U	**1.1**	0.072 U	–	–	**1.0**	**0.46**
	04/26/23 to 05/10/23	0.25 U	–	**0.24**	**0.55**	0.098 U	0.065 U	**0.21**	–	–	0.082 U	0.085 U	**0.38**	0.072 U	–	–	**0.68**	**0.28**
	07/27/23 to 08/10/23	**0.29**	–	**0.21**	**0.42**	0.099 U	0.066 U	**0.17**	–	–	0.083 U	0.085 U	**0.46**	0.073 U	–	–	**0.60**	**0.25**
Background	11/06/19 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**
	08/12/21 to 08/26/21	**0.27**	–	**0.20**	0.066 U	0.097 U	0.064 U	**0.12**	–	–	0.081 U	0.084 U	**0.45**	0.072 U	–	–	**0.45**	**0.15**
	10/04/22 to 10/18/22	**0.45**	–	**0.26**	**0.094**	0.098 U	0.065 U	**0.17**	–	–	0.082 U	0.085 U	**0.89**	0.072 U	–	–	**0.52**	**0.21**
	01/27/23 to 02/10/23	**0.67**	–	**0.29**	0.066 U	0.098 U	0.065 U	**0.11**	–	–	0.082 U	0.084 U	**0.71**	0.072 U	–	–	**0.33**	**0.13**
	04/26/23 to 05/10/23	0.25 U	–	**0.25**	**0.067**	0.098 U	0.065 U	0.074 U	–	–	0.082 U	0.085 U	**0.20**	0.073 U	–	–	**0.14**	0.077 U
	07/27/23 to 08/10/23	**0.34**	–	**0.22**	**0.087**	0.099 U	0.066 U	**0.078**	–	–	0.083 U	0.085 U	**0.32**	0.073 U	–	–	**0.31**	**0.11**
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	3.0	260	260	440	

Notes:
1. Only VOCs detected with regulatory screening values (DEQ's May 2018 RBCs)are listed. For a complete listing of VOCs, refer to the laboratory report in Attachment A.
2. DEQ Generic RBCs dated May 2018
J: The identification of the analyte is acceptable; the reported value is an estimate.
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
*: 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 6
Riverbank Observations
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Date	Time	Station Water Level During Observations[1]	Weather	Groundwater Seep Evaluation		Storm Pipe Outfall		Remarks
				Seeps Present?	Sheen?	Flow Present?	Sheen?	
2019 – 2020 Observations								
12/06/19	11:00	2.28	Sunny	No	No	--	--	
02/19/20	12:20	3.16	Sunny	No	No	--	--	
04/20/20	13:30	1.20	Sunny	No	No	--	--	
08/26/20	10:00	0.38	Sunny	No	No	--	--	
12/18/20	09:30	4.81	Rainy	No	No	--	--	
2021 Observations								
01/15/21	11:30	8.89	Foggy/overcast	No	No	--	--	
02/17/21	17:00	3.24	Partly sunny	No	No	--	--	
03/01/21	18:00	1.46	Sunny	No	No	--	--	
03/02/21	16:45	1.20	Sunny	No	No	--	--	
04/01/21	09:30	7.89	Sunny	Yes	Yes	--	--	
04/09/21	08:51	7.20	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/12/21	08:20	7.40	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/13/21	08:00	6.64	Sunny	At storm pipe	Yes	Yes	Yes	Increase in sheen
04/14/21	08:03	6.30	Sunny	At storm pipe	Yes	Yes	Yes	Decrease in sheen
04/15/21	08:05	6.08	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/16/21	08:04	5.40	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/19/21	09:04	4.60	Overcast	At storm pipe	Yes	Yes	Yes	
04/20/21	09:53	4.29	Sunny	At storm pipe	Yes	Yes	Yes	
04/21/21	10:56	3.75	Cloudy	At storm pipe	Yes	Yes	Yes	
04/22/21	12:30	3.45	Overcast	At storm pipe	Yes	Yes	Yes	
04/23/21	13:37	2.75	Overcast	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/24/21	12:30	1.38	Rainy	At storm pipe	Yes	Yes	Yes	High flow from pipe
04/25/21	13:30	1.03	Overcast	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/26/21	14:50	0.10	Cloudy	At storm pipe	Yes	Yes	Yes	
04/27/21	11:46	5.25	Cloudy	At storm pipe	Yes	Yes	Yes	
04/28/21	15:15	-0.30	Cloudy	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
04/29/21	09:14	9.64	Sunny	At storm pipe	Yes	Yes	Yes	High flow from pipe
04/30/21	08:20	6.99	Rainy	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
05/03/21	12:56	7.49	Rainy	Yes	Yes	Yes	Yes	Changed sorbent pads
05/04/21	11:54	4.81	Cloudy	--	--	Yes	Yes	
05/04/21	15:00	6.93	Partly sunny	Yes	Yes	No	--	
05/05/21	08:00	4.42	Cloudy	No	--	No	--	
05/06/21	15:15	5.50	Rainy	At storm pipe	Yes	Yes	Yes	
05/07/21	16:57	5.87	Cloudy	At storm pipe	Yes	Yes	Yes	
05/10/21	12:51	1.54	Sunny	At storm pipe	Yes	Yes	Yes	Dye visible. Changed sorbent pads.
05/11/21	14:30	-0.06	Sunny	No	--	No	--	
05/12/21	14:25	0.46	Sunny	No	--	No	--	
05/13/21	15:22	-0.18	Sunny	No	--	No	--	
05/14/21	10:00	8.40	Cloudy	No	--	No	--	
05/17/21	13:00	7.06	Cloudy	No	--	No	--	
05/18/21	12:25	7.39	Cloudy	No	--	No	--	
05/19/21	11:20	5.68	Cloudy	No	--	No	--	
05/20/21	11:45	4.46	Cloudy	No	--	No	--	
05/21/21	12:10	2.97	Cloudy	No	--	No	--	
05/24/21	16:10	2.76	Cloudy	Yes	Yes	Yes	Yes	Changed sorbent pads
05/25/21	16:05	0.45	Cloudy	No	--	No	--	
05/26/21	16:30	-0.68	Cloudy	No	--	No	--	
05/27/21	15:50	-0.76	Cloudy	At storm pipe	Yes	Yes	Yes	
05/28/21	15:00	0.99	Sunny	At storm pipe	Yes	Yes	Yes	Changed sorbent pads
05/31/21	10:00	6.36	Cloudy	No	--	No	--	
08/11/21	07:28	4.98	Sunny	No	--	No	--	
08/11/21	10:30	8.63	Sunny	Yes	Yes	--	--	
08/12/21	09:30	7.14	Sunny	Yes	Yes	No	--	
08/17/21	07:29	3.17	Cloudy	No	--	No	--	
08/24/21	07:29	6.31	Cloudy	No	--	No	--	
08/26/21	10:00	7.20	Partly sunny	Yes	Yes	No	--	
08/31/21	07:28	2.46	Cloudy	--	--	Yes	Yes	
09/07/21	07:29	7.79	Sunny	No	--	No	--	
09/14/21	07:30	0.37	Sunny	No	--	No	--	
09/21/21	07:29	7.28	Sunny	No	--	No	--	
09/28/21	07:28	1.40	Rainy	At storm pipe	Yes	Yes	Yes	High flow from pipe
10/05/21	07:28	8.62	Rainy	At storm pipe	Yes	Yes	Yes	High flow from pipe
10/12/21	07:28	-0.82	Cloudy	No	--	No	--	
10/19/21	07:28	7.97	Partly sunny	No	--	No	--	
10/26/21	07:29	2.07	Rainy	At storm pipe	Yes	Yes	Yes	High flow from pipe
11/02/21	07:30	7.68	Cloudy	No	--	No	--	Outlet plugged
11/09/21	07:29	0.43	Rainy	No	--	Yes	No	
11/16/21	07:29	7.80	Partly sunny	At storm pipe	Yes	No	--	
11/23/21	07:30	2.02	Rainy	No	--	Yes	No	High flow from pipe
11/30/21	07:30	5.11	Rainy	No	--	Yes	No	
12/07/21	07:30	1.55	Rainy	No	--	Yes	No	
12/14/21	07:30	7.02	Cloudy	No	--	No	--	
12/21/21	07:30	3.68	Cloudy	Yes	No	Yes	No	
12/28/21	07:31	3.36	Cloudy	No	--	No	--	

TABLE 6
Riverbank Observations
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Date	Time	Station Water Level During Observations[1]	Weather	Groundwater Seep Evaluation		Storm Pipe Outfall		Remarks
				Seeps Present?	Sheen?	Flow Present?	Sheen?	
2022 Observations								
01/04/22	07:33	3.60	Cloudy	No	--	No	--	
01/11/22	07:33	8.20	Rainy	No	--	Yes	No	
01/18/22	07:29	3.80	Cloudy	No	--	No	--	
01/25/22	07:29	7.50	Sunny	No	--	No	--	
10/04/22	09:30	-0.07	Sunny	No	--	No	--	
2023 Observations								
01/25/23	10:15	6.50	Cloudy	No	No	--	--	
01/25/23	12:00	8.40	Partly sunny	No	No	--	--	
01/25/23	14:30	5.71	Sunny	No	No	--	--	
01/26/23	10:00	4.76	Cloudy	No	No	--	--	
01/26/23	16:30	3.42	Cloudy	No	No	--	--	
01/27/23	10:00	4.11	Sunny	No	No	--	--	
01/27/23	12:30	8.28	Sunny	No	No	--	--	
04/27/23	10:10	4.97	Partly sunny	No	No	--	--	
04/28/23	17:10	4.93	Partly sunny	No	No	--	--	
07/25/23	08:30	5.04	Cloudy	No	No	--	--	
07/26/23	09:00	4.55	Sunny	No	No	--	--	

Notes:
Storm pipe outfall observations conducted by For George staff.
DEQ's contractor assumed responsibility of maintaining the sorbet boom at the storm pipe outfall in September 2021.
1. Water levels obtained from NOAA observatoin station 9439040 in Astoria, Oregon, using NAVD88 (feet).
--: not analyzed

ATTACHMENT A

ATTACHMENT A

FIELD DOCUMENTATION

SUB-SLAB VAPOR SAMPLING DATA COLLECTION

NV5

Project No. BigBeams-1-04-05 (also see T08)

Site Name Former Astoria Warehousing

Site Address 70 W Marine Drive, Astoria, Oregon

NV5 Personnel DD.

Weather Clear Sunny 65°

Barometric Pressure (inHg): 30.11 inHg

Probe I.D.	Canister I.D.	Manifold I.D.	PID Reading (ppm)	Purge Rate (mL/min)	Purge Volume (mL)	Start Vacuum (inHg)	End Vacuum (inHg)	Start Time	End Time	Notes/Leak Check Used
VP-3	022849	009279	0.8	100	300	27	3"	1320	1330	Isopropyl Alcohol 70% ✓
VP-2	023136	005990	2.9	100	300	30+	4	1335	1345	" ✓
VP-1	022182	007826	4.6	100	300	30	4	1350	1400	" ✓
VP-4	024758	024758	4.1	100	300	30	4	1410	1415	" ✓

✓ No change in PID reading when alcohol soaked rags were placed.

Sub-Slab Vapor Sampling Purge Volume Sheet

Date: 7/27/2023

input
calc

PFA Tubing (0.25" nominal O.D.; 0.185" I.D.)		
Internal Area:	0.0276	in^2
Length:	24	in (typ)
Tubing Vol.:	0.662	in^3

Manifold (0.25" OD; 0.152" ID, SS Swagelok)		
Internal Area:	0.0181	in^2
Length w/Purge Tee:	18	in (typ)
Manifold Vol. w/10% for Fittings:	0.358	in^3

Total Dead Volume:	1.02	in^3
	16.7	mL

PID Pump Flow Rate:	100	mL/min

Probe	*Begin Purge*	*End Purge*	*Purge Time (min)*	*Purge Volume (mL)*	*Dead Volumes Purged*
VP-1	13:46	13:49	3	300	17.9
VP-2	13:31	13:34	3	300	17.9
VP-3	13:16	13:19	3	300	17.9
VP-4	14:06	14:09	3	300	17.9

NV5

Groundwater Monitoring Data Sheet Summary Information

Project No. RigBeams 1.01

Site Name Former Astoria Warehousing

NVS Personnel A.D.D

072523
High Tide - 6:58am / 7:11pm
Low Tide - 1241pm
at 10:00am - Water Level: 3.21' (NOAA)

072623
High Tide: 8:18am
Low Tide: 1:31pm

Well I.D.	Well Diameter (inches)	Water Level Gauging						Groundwater Sampling							Other Notes
		Gauging Date	Gauging Time	Total Well Depth (feet BTOC)	Depth to Water (feet BTOC)	Free Product?	NAPL Thickness (feet)	Sampling Date	Sampling Time	Purge Volume (gallons)	Sheen	Odor?	Number of Containers	Analysis Required	
6 MW-1	2	072523	1045	25.5	11.11'			072623	1520	2.8	SS	no	6	See COC.	Odor very slight.
3 MW-2	2	"	1035	19.0	12.86'	No	na	072523	1710	1.5	NS	no	6	See COC	
1 MW-3	2	"	1025	18.6	3.72'	No	na	072523	1350	2.5	NS	no	6	See COC	Turbidity observable.
7 MW-4	2	"	1048	18.8	12.07'	No	na	072623	1400	2.5	NS	no	6	See COC	
2 MW-5	2	"	1030	19.0	9.89'	No	na	072523	1540	1.9	NS	no	6	See COC.	
4 MW-6	2	"	1040	18.8	11.91'	No	na	072623	1135	1.9	NS	no	6	See COC	
5 MW-7	2	"	1042	25.3	11.64'	No	na	072623	1250	1.5	SS	no	6	See COC	Blotchy Sheen - No Free Product.
8 MW-8	2	"	1050	25.3	11.27'	No	na	072723	1120	3.2	MS	SO	6	See COC	→ No evidence of LNAPL absorbed to sock. (Sorbent sock did not need replacement)
OAS-1	3/4	"	1100	19.3	12.86'	No	na								
OAS-2	3/4	"	1105	19.6	12.85'	No	na								
OAS-3	3/4	"	1107	19.4	13.01'	No	na								
OAS-4	3/4	"	1110	19.6	13.10'	No	na								
OAS-12	3/4	"	1112	18.0	12.85'	No	na								

Notes

Equipment Used: Solinst Interface Probe

Purging Method YSI. Peristaltic Pump with disposable tubing

Sampling Order - clean to dirty MW-3, MW-5, MW-2, MW-6, MW-7, MW-1, MW-4, MW-8

#1

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 07/25/23
Well I.D. MW-3
Well Depth (ft BGS) 18.6

Low Tide at 1241 pm.

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU) (Sper Scientific)	Other Notes
1245	0	-	8.74'	-	-	-	-	-	-	-	
1258	-	-	8.83	0.09'	-	-	-	-	-	-	YSI 7.11
1300	-	200	"	-	15.7	2.42	5.37	224.9	417	95	-
1305	.25	"	"	-	15.3	1.48	5.58	216.1	415	86	1
1315	1	250	"	-	15.62	0.79	6.03	184.9	416	81	1
1325	1.3	Approx 190	"	-	15.34	0.72	6.18 *	179.0	415	79	1
1330	1.6	"	"	-	15.46	0.62	6.19	176.7	414	66 *	1
1335	1.9	"	"	-	15.38	0.55	6.25	173.6	414	51 *	1
1340	2.1	"	"	-	15.41	0.48	6.28	170.1	414	58	2
1345	2.3	"	"	-	15.49	0.44	6.3	168.1	414	53.4	3
1350	2.5	"	"	-	-	-	-	-	-	-	Sample Collected.
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
YSI (NV5), Turbidity meter (Sper Scientific 860040, Peristaltic pump with disposable tubing.

Purging Method
3 Consective readings

Notes:
Complete separate sheet for each sampled well
Purge rate should be maintained below 200 mL/minute

#2

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 07/25/23
Well I.D. MW-5
Well Depth (ft BGS) 19.2

Low Tide at 1241 pm
High Tide at 711 pm

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1430	-	-	9.87	-	-	-	-	-	-	-	Initial
1455	-	Approx 190	9.94	0.07	-	-	-	-	-	-	YSI Filled
1500	.2	"	"	-	14.78	1.21	5.23	222.9	285	.82	
1515	1	"	"	-	14.83	0.78	5.70	201.0	287	.72	1
1520	1.2	"	"	-	14.86	0.64 *	5.75	198.9	288	.85	*1
1525	1.4	"	9.92	+.02	14.87	0.55 *	5.80	196.0	289	.96	*1
1530	1.6	"	"	-	14.86	0.50	5.83	195.4	290	.47	2
1535	1.8	"	"	-	14.84	0.47	5.85	195.2	290	.47	3
1540	1.9	"	"	-	-	-	-	-	-	-	Sample Collected
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
YSI (NV5), Turbidity meter (Sper Scientific 860040, Peristaltic pump with disposable tubing.

Purging Method
3 Consective readings

Notes
Complete separate sheet for each sampled well
Purge rate should be maintained below 200 mL/minute

#3

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 07/25/23
Well I.D. MW-2
Well Depth (ft BGS) 19.0

- High Tide @ 7:11 pm
Low Tide @ 12:41 pm

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1620	-	-	12.92	-	-	-	-	-	-	-	Initial
1630	-	150	12.95	0.03	-	-	-	-	-	-	YSI Filled.
1645	.6	"	"	-	15.84	.67	6.11	196.7	571	4.31	1
1650	.75	"	"	-	15.78*	.52*	6.14	194.6	568	0.41*	*1
1655	.9	"	"	-	15.77	.45	6.19	192.3	567	0.45	1
1700	1.1	"	"	-	15.71	.44	6.21	190.6	564	0.32	2
1705	1.3	"	"	-	15.71	.34	6.25	188.5	563	0.39	3
1710	1.5	"	"	-	-	-	-	-	-	-	Sample Collected.
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
YSI (NV5), Turbidity meter (Sper Scientific 860040, Peristaltic pump with disposable tubing.

Purging Method
3 Consective readings

Notes:
Complete separate sheet for each sampled well
Purge rate should be maintained below 200 mL/minute

#4

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 072623
Well I.D. MW-6
Well Depth (ft BGS) 25.5

High Tide: 8:18am
Low Tide: 1:31pm

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (feet BTOC)	Drawdown (feet)	Temp (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1030	-	-	11.92	-	-	-	-	-	-	-	-
1040	-	Aprox 175	12.02	.1	-	-	-	-	-	-	VOA filled.
1110	1	"	"	-	13.86	0.70	6.13	193.4	551	3.85	First Reading after 1gl purge
1115	1.2	"	"	-	13.90	0.59*	6.15	191.6	550	3.73	*
1120	1.4	"	"	-	13.9	0.49	6.20	189.6	547	3.53	1
1125	1.6	"	"	-	13.93	0.48	6.22	188.3	545	3.68	2
1130	1.8	"	"	-	13.94	0.43	6.25	187.1	542	3.42	3
1135	1.9 Approx	-	-	-	-	-	-	-	-	-	Sample Collected.
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
YSI (NV5), Turbidity meter (Sper Scientific 860040, Peristaltic pump with disposable tubing.

Purging Method
3 Consective readings

Notes:
Complete separate sheet for each sampled well
Purge rate should be maintained below 200 mL/minute

#5

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date
Well I.D. MW-7
Well Depth (ft BGS) 25.3

Low Tide 1:31 pm.

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1205	–	–	11.74	–	–	–	–	–	–	–	Initial
1215	–	Appx 175	12.21	.47'	–	–	–	–	–	59	YSI Filled.
1235	1	"	"	–	16.94	0.49	6.40	185.3	645	59	1st Reading at 1 gal
1240	1.2	"	12.24	.03	16.92	0.40	6.42	184.0	639	60	2
1245	1.4	"	–	–	16.94	0.36	6.43	182.9	640	57	3
1250	1.5	"	–	–	–	–	–	–	–	–	Sample Collected
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
YSI (NV5), Turbidity meter (Sper Scientific 860040, Peristaltic pump with disposable tubing.

Purging Method
3 Consective readings

Notes:
Complete separate sheet for each sampled well
Purge rate should be maintained below 200 mL/minute

#6

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 072625
Well I.D. MW-1
Well Depth (ft BGS) 19.2

Low Tide 1:31pm

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1357	-	-	11.21	-	-	-	-	-	-	-	Initial
1420	-	~~200~~ 190	11.29	.08	-	-	-	-	-	12.17	YSI Filled (delay due to battery issue)
1435	1	"	"	-	16.65	1.36	6.47	179.5	525	13.45	SS observed.
1440	1.2	"	"	-	16.55	1.04 *	6.41	179.4	524	12.59	
1445	1.4	"	"	-	16.38	0.92	6.38	179.9	522	5.17	
1450	1.6	"	"	-	16.36	0.78	6.35	179.8	522	4.80	1
1455	1.8	"	"	-	16.40	0.69 *	6.32	179.8	522	3.66	1
1500	2	"	"	-	16.40	0.63	6.36	178.7	522	4.28	2
1505	2.2	"	"	-	16.36	0.53*	6.34	179.4	522	4.08	1
1510	2.4	"	"	-	16.23	0.54	6.34	179.3	522	4.13	2
1515	2.6	"	"	-	16.	0.53	6.36	178.4	522	3.81	3
1520	2.8	"	"	-	-	-	-	-	-	-	Sample Collected.
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
YSI (NV5), Turbidity meter (Sper Scientific 860040, Peristaltic pump with disposable tubing.

Purging Method
3 Consective readings

Notes
Complete separate sheet for each sampled well
Purge rate should be maintained below 200 mL/minute

#7

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 072623
Well I.D. MW-4
Well Depth (ft BGS) 18.8

Low Tide: 1:31pm
High Tide 7:57pm

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (feet BTOC)	Drawdown (feet)	Temp (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
1540	—	—	12.13	—	—	—	—	—	—	—	Initial.
1605	—	approx 190	12.80	.67	—	—	—	—	—	—	YSI filled.
1620	1	"	12.79	+ .01	13.74	.89	6.42	187.1	482	18.95	
1625	1.2	"	"	—	13.72	.87	6.40	186.5	478	16.85	
1630	1.4	"	12.76	+.03	13.73	.73	6.41	185.2	470	16.39	
1635	1.6	"	"	—	13.73	.65	6.43	183.7	453	17.80	
1640	1.8	"	"	—	13.72	.63	6.44	183.1	448	15.82	
1645	2	"	"	—	13.73	.58	6.43	183.2	443	14.95	1
1650	2.2	"	"	—	13.73	.57	6.44	182.6	436	14.73	2
1655	2.4	"	12.75	+.01	13.70	.56	6.44	182.4	432	14.50	3
1700	2.5	—	"	—	—	—	—	—	—	—	Sample Collected.
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
YSI (NV5), Turbidity meter (Sper Scientific 860040, Peristaltic pump with disposable tubing.

Purging Method
3 Consective readings

Notes:
Complete separate sheet for each sampled well
Purge rate should be maintained below 200 mL/minute

#8

NV5

Low-Flow Groundwater Sampling Data Sheet

Project No. BigBeams-1-04 (Task 05 & Task 08)
Site Name Former Astoria Warehousing
NV5 Personnel ADD
Date 072723
Well I.D. MW-8
Well Depth (ft BGS) 25.3

High Tide 0945 am
Low Tide 2:36 pm.

Time	Purge Volume (gallons)	Purge Rate (mL/min)	Depth to Water (feet BTOC)	Drawdown (feet)	Temp. (oC)	D.O. (mg/L)	pH	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	Other Notes
0950	-	-	10.30 (approx)	-	-	-	-	-	-	-	Initial
1005	-	150	10.38	-0.08	-	-	-	-	-	-	YSI Filled.
1025	1	"	"	-	13.94	1.56	7.05	187.5	479	17.06	1
1030	1.2	"	"	-	13.92	1.28	7.05	186.1	478	15.91	Will wait for 1.5 gal for D.O.
1040	1.5	"	"	-	13.82	0.92	7.05	184.6	477	15.58	1
1045	1.7	"	"	-	13.85	0.78 *	7.04	183.6	476	9.93	1
1050	1.9	"	"	-	13.78	0.72	7.03	183.1	477	4.36	1
1105	2.7	"	"	-	13.81	0.59	6.97	183.1	477	.54	1
1110	2.9	"	"	-	13.76	0.58	6.94	183.1	479	1.48	2
1115	3.1	"	"	-	13.75	0.57	6.93	183.1	479	1.97	3
1120	3.2	-	-	-	-	-	-	-	-	-	Sample Collected.
Stabilization Parameters (3 consecutive readings)				<0.3 feet (not mandatory)	3%	10% or 3 consecutive <0.5 mg/L	±0.1 units	±10 mV	3%	10% or 3 consecutive <5 NTU	

Equipment Used:
YSI (NV5), Turbidity meter (Sper Scientific 860040, Peristaltic pump with disposable tubing.

Purging Method
3 Consective readings

Notes:
Complete separate sheet for each sampled well
Purge rate should be maintained below 200 mL/minute

NV5

INDOOR AIR SAMPLING DATA COLLECTION

Project No.	BigBeams-1-04-05 (also see T08)
Site Name	Former Astoria Warehousing
Site Address	70 W Marine Drive, Astoria, Oregon

NV5 Personnel	ADD
Weather	Clear/PC
Start and End Barometric Pressure (inHg):	30.11/29.97

Sample I.D.	Radeillo I.D.	Start Date	Start Time	Starting Temperature (°F)	End Date	End Time	End Temperature (°F)	Notes
Indoor-1	ST028	072723	1500	75°(int)	081023	0920	74* (Int)	ID Label Missing. I.D designated by ADD
Indoor-2	ST029	"	1505		081023	0925		
Indoor-3	SL669	"	1510		081023	0930		
Indoor-4	SL665	"	1515		081023	0935		
Indoor-5	SL664	"	1520		081023	0945		
Indoor-6	SL539	"	1525		081023	0950		
Indoor-7	SL538	"	1530		081023	0955		
Background	ST030	"	1535	66°(ext)	081023	1000	63* (Ext)	

*High tide at 6:58am / 8:18am
Δ Low tide at 12:41pm / 1:31pm

Riverbank Observations
Former Astoria Warehousing Site
70 West Marine Drive
Astoria, Oregon

Date	Time	Weather	Columbia River Water Level During Inspection*	Time from Low Tide	Seep? (slight, moderate, heavy)	Petroleum-Like Sheen? (slight, moderate, heavy)	Notes (boom, absorbent pad, etc.)
072523	0830	Clear/Sunny/60°	*5.04'	Δ 6hrs20mins	na	na	- +Photos.
072623	0900	Clear/Sunny/60°	4.55'	4.5hrs	na	na	- +Photos.

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

ATTACHMENT B

ATTACHMENT B

CHEMICAL ANALYTICAL PROGRAM

GENERAL

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

REVIEW OF ANALYTICAL DATA

The analytical laboratories used for this project maintain 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

NV5 reviewed the attached analytical data reports for data quality exceptions and deviations from acceptable method performance criteria. Based on our review of the analytical reports, the analytical data appear acceptable for their intended use.

ANALYTICAL REPORT

August 09, 2023

NV5 - Wilsonville, OR

Sample Delivery Group:	L1641056
Samples Received:	08/01/2023
Project Number:	BigBeams-1-04task 10
Description:	Big Beams-1-04

Report To:

Andre DeJonge
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Entire Report Reviewed By:

Brian Ford
Project Manager

TABLE OF CONTENTS

VP-3 L1641056-01 Air

Collected by: Andre DeJonge | Collected date/time: 07/27/23 13:30 | Received date/time: 08/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2109804	1	08/08/23 14:13	08/08/23 14:13	SDS	Mt. Juliet, TN

VP-2 L1641056-02 Air

Collected by: Andre DeJonge | Collected date/time: 07/27/23 13:45 | Received date/time: 08/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2109804	1	08/08/23 14:55	08/08/23 14:55	SDS	Mt. Juliet, TN

VP-1 L1641056-03 Air

Collected by: Andre DeJonge | Collected date/time: 07/27/23 14:00 | Received date/time: 08/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2109804	1	08/08/23 15:35	08/08/23 15:35	SDS	Mt. Juliet, TN

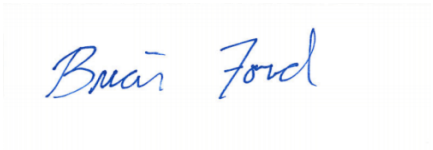
VP-4 L1641056-04 Air

Collected by: Andre DeJonge | Collected date/time: 07/27/23 14:15 | Received date/time: 08/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2109804	20	08/08/23 16:13	08/08/23 16:13	SDS	Mt. Juliet, TN

CASE NARRATIVE

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



Brian Ford
Project Manager

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	53.0	126		1	WG2109804
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG2109804
Benzene	71-43-2	78.10	0.200	0.639	0.323	1.03		1	WG2109804
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG2109804
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG2109804
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG2109804
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG2109804
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG2109804
Carbon disulfide	75-15-0	76.10	0.200	0.622	0.426	1.33		1	WG2109804
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG2109804
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG2109804
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG2109804
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG2109804
Chloromethane	74-87-3	50.50	0.200	0.413	0.226	0.467		1	WG2109804
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG2109804
Cyclohexane	110-82-7	84.20	0.200	0.689	0.995	3.43		1	WG2109804
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG2109804
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG2109804
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG2109804
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG2109804
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG2109804
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG2109804
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG2109804
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG2109804
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG2109804
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG2109804
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG2109804
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG2109804
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG2109804
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG2109804
Ethanol	64-17-5	46.10	2.50	4.71	69.3	131		1	WG2109804
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG2109804
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG2109804
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	ND	ND		1	WG2109804
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	ND	ND		1	WG2109804
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND	J3	1	WG2109804
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG2109804
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG2109804
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG2109804
n-Hexane	110-54-3	86.20	0.630	2.22	0.992	3.50		1	WG2109804
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG2109804
Methylene Chloride	75-09-2	84.90	0.200	0.694	1.97	6.84		1	WG2109804
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG2109804
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	2.92	8.61		1	WG2109804
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG2109804
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG2109804
MTBE	1634-04-4	88.10	0.200	0.721	0.309	1.11		1	WG2109804
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG2109804
2-Propanol	67-63-0	60.10	1.25	3.07	12.8	31.5		1	WG2109804
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG2109804
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG2109804
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG2109804
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG2109804
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG2109804
Toluene	108-88-3	92.10	0.500	1.88	0.747	2.81		1	WG2109804
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG2109804

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	WG2109804
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG2109804
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG2109804
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG2109804
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG2109804
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	7.88	36.8		1	WG2109804
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG2109804
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG2109804
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG2109804
m&p-Xylene	1330-20-7	106	0.400	1.73	0.452	1.96		1	WG2109804
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG2109804
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG2109804
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*95.7*				WG2109804

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	28.8	68.4		1	WG2109804
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG2109804
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG2109804
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG2109804
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG2109804
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG2109804
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG2109804
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG2109804
Carbon disulfide	75-15-0	76.10	0.200	0.622	0.254	0.791		1	WG2109804
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG2109804
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG2109804
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG2109804
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG2109804
Chloromethane	74-87-3	50.50	0.200	0.413	0.325	0.671		1	WG2109804
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG2109804
Cyclohexane	110-82-7	84.20	0.200	0.689	1.30	4.48		1	WG2109804
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG2109804
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG2109804
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG2109804
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG2109804
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG2109804
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG2109804
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG2109804
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG2109804
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG2109804
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG2109804
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG2109804
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG2109804
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG2109804
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG2109804
Ethanol	64-17-5	46.10	2.50	4.71	19.8	37.3		1	WG2109804
Ethylbenzene	100-41-4	106	0.200	0.867	0.297	1.29		1	WG2109804
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG2109804
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	0.207	1.16		1	WG2109804
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.216	1.07		1	WG2109804
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND	J3	1	WG2109804
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG2109804
Heptane	142-82-5	100	0.200	0.818	0.880	3.60		1	WG2109804
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG2109804
n-Hexane	110-54-3	86.20	0.630	2.22	1.17	4.12		1	WG2109804
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG2109804
Methylene Chloride	75-09-2	84.90	0.200	0.694	0.737	2.56		1	WG2109804
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG2109804
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG2109804
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG2109804
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG2109804
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG2109804
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG2109804
2-Propanol	67-63-0	60.10	1.25	3.07	10.5	25.8		1	WG2109804
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG2109804
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG2109804
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG2109804
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG2109804
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG2109804
Toluene	108-88-3	92.10	0.500	1.88	0.899	3.39		1	WG2109804
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG2109804

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	WG2109804
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG2109804
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG2109804
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	0.356	1.75		1	WG2109804
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG2109804
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG2109804
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG2109804
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG2109804
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG2109804
m&p-Xylene	1330-20-7	106	0.400	1.73	0.828	3.59		1	WG2109804
o-Xylene	95-47-6	106	0.200	0.867	0.271	1.17		1	WG2109804
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG2109804
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*94.3*				WG2109804

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	19.3	45.9		1	WG2109804
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG2109804
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG2109804
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG2109804
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG2109804
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG2109804
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG2109804
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG2109804
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG2109804
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG2109804
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG2109804
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG2109804
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG2109804
Chloromethane	74-87-3	50.50	0.200	0.413	0.289	0.597		1	WG2109804
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG2109804
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG2109804
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG2109804
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG2109804
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG2109804
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG2109804
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG2109804
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG2109804
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG2109804
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG2109804
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG2109804
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG2109804
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG2109804
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG2109804
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG2109804
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG2109804
Ethanol	64-17-5	46.10	2.50	4.71	110	207	E	1	WG2109804
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG2109804
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG2109804
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	0.216	1.21		1	WG2109804
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.376	1.86		1	WG2109804
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND	J3	1	WG2109804
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG2109804
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG2109804
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG2109804
n-Hexane	110-54-3	86.20	0.630	2.22	5.83	20.6		1	WG2109804
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG2109804
Methylene Chloride	75-09-2	84.90	0.200	0.694	7.83	27.2		1	WG2109804
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG2109804
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG2109804
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG2109804
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG2109804
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG2109804
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG2109804
2-Propanol	67-63-0	60.10	1.25	3.07	14.7	36.1		1	WG2109804
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG2109804
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG2109804
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG2109804
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG2109804
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG2109804
Toluene	108-88-3	92.10	0.500	1.88	1.14	4.29		1	WG2109804
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG2109804

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	WG2109804
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG2109804
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG2109804
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG2109804
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG2109804
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG2109804
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG2109804
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG2109804
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG2109804
m&p-Xylene	1330-20-7	106	0.400	1.73	0.406	1.76		1	WG2109804
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG2109804
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG2109804
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*95.3*				WG2109804

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	25.0	59.4	875	2080		20	WG2109804
Allyl chloride	107-05-1	76.53	4.00	12.5	ND	ND		20	WG2109804
Benzene	71-43-2	78.10	4.00	12.8	ND	ND		20	WG2109804
Benzyl Chloride	100-44-7	127	4.00	20.8	ND	ND		20	WG2109804
Bromodichloromethane	75-27-4	164	4.00	26.8	ND	ND		20	WG2109804
Bromoform	75-25-2	253	12.0	124	ND	ND		20	WG2109804
Bromomethane	74-83-9	94.90	4.00	15.5	ND	ND		20	WG2109804
1,3-Butadiene	106-99-0	54.10	40.0	88.5	ND	ND		20	WG2109804
Carbon disulfide	75-15-0	76.10	4.00	12.4	ND	ND		20	WG2109804
Carbon tetrachloride	56-23-5	154	4.00	25.2	ND	ND		20	WG2109804
Chlorobenzene	108-90-7	113	4.00	18.5	ND	ND		20	WG2109804
Chloroethane	75-00-3	64.50	4.00	10.6	ND	ND		20	WG2109804
Chloroform	67-66-3	119	4.00	19.5	ND	ND		20	WG2109804
Chloromethane	74-87-3	50.50	4.00	8.26	ND	ND		20	WG2109804
2-Chlorotoluene	95-49-8	126	4.00	20.6	ND	ND		20	WG2109804
Cyclohexane	110-82-7	84.20	4.00	13.8	ND	ND		20	WG2109804
Dibromochloromethane	124-48-1	208	4.00	34.0	ND	ND		20	WG2109804
1,2-Dibromoethane	106-93-4	188	4.00	30.8	ND	ND		20	WG2109804
1,2-Dichlorobenzene	95-50-1	147	4.00	24.0	ND	ND		20	WG2109804
1,3-Dichlorobenzene	541-73-1	147	4.00	24.0	ND	ND		20	WG2109804
1,4-Dichlorobenzene	106-46-7	147	4.00	24.0	ND	ND		20	WG2109804
1,2-Dichloroethane	107-06-2	99	4.00	16.2	ND	ND		20	WG2109804
1,1-Dichloroethane	75-34-3	98	4.00	16.0	ND	ND		20	WG2109804
1,1-Dichloroethene	75-35-4	96.90	4.00	15.9	ND	ND		20	WG2109804
cis-1,2-Dichloroethene	156-59-2	96.90	4.00	15.9	ND	ND		20	WG2109804
trans-1,2-Dichloroethene	156-60-5	96.90	4.00	15.9	ND	ND		20	WG2109804
1,2-Dichloropropane	78-87-5	113	4.00	18.5	ND	ND		20	WG2109804
cis-1,3-Dichloropropene	10061-01-5	111	4.00	18.2	ND	ND		20	WG2109804
trans-1,3-Dichloropropene	10061-02-6	111	4.00	18.2	ND	ND		20	WG2109804
1,4-Dioxane	123-91-1	88.10	4.00	14.4	ND	ND		20	WG2109804
Ethanol	64-17-5	46.10	50.0	94.3	2860	5390	E	20	WG2109804
Ethylbenzene	100-41-4	106	4.00	17.3	ND	ND		20	WG2109804
4-Ethyltoluene	622-96-8	120	4.00	19.6	ND	ND		20	WG2109804
Trichlorofluoromethane	75-69-4	137.40	4.00	22.5	ND	ND		20	WG2109804
Dichlorodifluoromethane	75-71-8	120.92	4.00	19.8	ND	ND		20	WG2109804
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	4.00	30.7	ND	ND	J3	20	WG2109804
1,2-Dichlorotetrafluoroethane	76-14-2	171	4.00	28.0	ND	ND		20	WG2109804
Heptane	142-82-5	100	4.00	16.4	ND	ND		20	WG2109804
Hexachloro-1,3-butadiene	87-68-3	261	12.6	135	ND	ND		20	WG2109804
n-Hexane	110-54-3	86.20	12.6	44.4	ND	ND		20	WG2109804
Isopropylbenzene	98-82-8	120.20	4.00	19.7	ND	ND		20	WG2109804
Methylene Chloride	75-09-2	84.90	4.00	13.9	ND	ND		20	WG2109804
Methyl Butyl Ketone	591-78-6	100	25.0	102	ND	ND		20	WG2109804
2-Butanone (MEK)	78-93-3	72.10	25.0	73.7	ND	ND		20	WG2109804
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	25.0	102	ND	ND		20	WG2109804
Methyl methacrylate	80-62-6	100.12	4.00	16.4	ND	ND		20	WG2109804
MTBE	1634-04-4	88.10	4.00	14.4	ND	ND		20	WG2109804
Naphthalene	91-20-3	128	12.6	66.0	ND	ND		20	WG2109804
2-Propanol	67-63-0	60.10	25.0	61.5	1610	3960		20	WG2109804
Propene	115-07-1	42.10	25.0	43.0	ND	ND		20	WG2109804
Styrene	100-42-5	104	4.00	17.0	ND	ND		20	WG2109804
1,1,2,2-Tetrachloroethane	79-34-5	168	4.00	27.5	ND	ND		20	WG2109804
Tetrachloroethylene	127-18-4	166	4.00	27.2	ND	ND		20	WG2109804
Tetrahydrofuran	109-99-9	72.10	4.00	11.8	ND	ND		20	WG2109804
Toluene	108-88-3	92.10	10.0	37.7	ND	ND		20	WG2109804
1,2,4-Trichlorobenzene	120-82-1	181	12.6	93.3	ND	ND		20	WG2109804

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	4.00	21.8	ND	ND		20	WG2109804
1,1,2-Trichloroethane	79-00-5	133	4.00	21.8	ND	ND		20	WG2109804
Trichloroethylene	79-01-6	131	4.00	21.4	ND	ND		20	WG2109804
1,2,4-Trimethylbenzene	95-63-6	120	4.00	19.6	ND	ND		20	WG2109804
1,3,5-Trimethylbenzene	108-67-8	120	4.00	19.6	ND	ND		20	WG2109804
2,2,4-Trimethylpentane	540-84-1	114.22	4.00	18.7	ND	ND		20	WG2109804
Vinyl chloride	75-01-4	62.50	4.00	10.2	ND	ND		20	WG2109804
Vinyl Bromide	593-60-2	106.95	4.00	17.5	ND	ND		20	WG2109804
Vinyl acetate	108-05-4	86.10	4.00	14.1	ND	ND		20	WG2109804
m&p-Xylene	1330-20-7	106	8.00	34.7	ND	ND		20	WG2109804
o-Xylene	95-47-6	106	4.00	17.3	ND	ND		20	WG2109804
TPH (GC/MS) Low Fraction	8006-61-9	101	4000	16500	ND	ND		20	WG2109804
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*97.1*				WG2109804

Method Blank (MB)

(MB) R3958208-2 08/08/23 10:03

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
Ethanol	0.766	J	0.265	2.50
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

Method Blank (MB)

(MB) R3958208-2 08/08/23 10:03

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
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
MTBE	U		0.0647	0.200
Naphthalene	U		0.350	0.630
2-Propanol	U		0.264	1.25
Propene	U		0.0932	1.25
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
TPH (GC/MS) Low Fraction	U		39.7	200
(S) 1,4-Bromofluorobenzene	*95.5*			*60.0-140*

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

(LCS) R3958208-1 08/08/23 09:24 • (LCSD) R3958208-3 08/08/23 10:50

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	3.75	3.46	3.59	92.3	95.7	70.0-130			3.69	25
Allyl chloride	3.75	3.76	3.61	100	96.3	70.0-130			4.07	25
Benzene	3.75	3.93	3.89	105	104	70.0-130			1.02	25
Benzyl Chloride	3.75	3.87	3.82	103	102	70.0-152			1.30	25

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

(LCS) R3958208-1 08/08/23 09:24 • (LCSD) R3958208-3 08/08/23 10:50

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromodichloromethane	3.75	3.95	3.90	105	104	70.0-130			1.27	25
Bromoform	3.75	3.63	3.52	96.8	93.9	70.0-130			3.08	25
Bromomethane	3.75	4.25	4.46	113	119	70.0-130			4.82	25
1,3-Butadiene	3.75	3.89	4.04	104	108	70.0-130			3.78	25
Carbon disulfide	3.75	3.67	3.74	97.9	99.7	70.0-130			1.89	25
Carbon tetrachloride	3.75	3.55	3.60	94.7	96.0	70.0-130			1.40	25
Chlorobenzene	3.75	3.73	3.73	99.5	99.5	70.0-130			0.000	25
Chloroethane	3.75	3.65	3.74	97.3	99.7	70.0-130			2.44	25
Chloroform	3.75	3.67	3.71	97.9	98.9	70.0-130			1.08	25
Chloromethane	3.75	4.28	4.38	114	117	70.0-130			2.31	25
2-Chlorotoluene	3.75	3.86	3.79	103	101	70.0-130			1.83	25
Cyclohexane	3.75	3.48	3.58	92.8	95.5	70.0-130			2.83	25
Dibromochloromethane	3.75	3.85	3.81	103	102	70.0-130			1.04	25
1,2-Dibromoethane	3.75	3.83	3.76	102	100	70.0-130			1.84	25
1,2-Dichlorobenzene	3.75	3.45	3.49	92.0	93.1	70.0-130			1.15	25
1,3-Dichlorobenzene	3.75	3.49	3.55	93.1	94.7	70.0-130			1.70	25
1,4-Dichlorobenzene	3.75	3.66	3.75	97.6	100	70.0-130			2.43	25
1,2-Dichloroethane	3.75	3.68	3.65	98.1	97.3	70.0-130			0.819	25
1,1-Dichloroethane	3.75	4.13	4.16	110	111	70.0-130			0.724	25
1,1-Dichloroethene	3.75	4.00	4.11	107	110	70.0-130			2.71	25
cis-1,2-Dichloroethene	3.75	3.82	3.83	102	102	70.0-130			0.261	25
trans-1,2-Dichloroethene	3.75	4.02	4.03	107	107	70.0-130			0.248	25
1,2-Dichloropropane	3.75	4.14	4.06	110	108	70.0-130			1.95	25
cis-1,3-Dichloropropene	3.75	4.24	4.12	113	110	70.0-130			2.87	25
trans-1,3-Dichloropropene	3.75	3.57	3.46	95.2	92.3	70.0-130			3.13	25
1,4-Dioxane	3.75	3.23	3.22	86.1	85.9	70.0-140			0.310	25
Ethanol	3.75	3.52	3.82	93.9	102	55.0-148			8.17	25
Ethylbenzene	3.75	3.41	3.35	90.9	89.3	70.0-130			1.78	25
4-Ethyltoluene	3.75	3.48	3.51	92.8	93.6	70.0-130			0.858	25
Trichlorofluoromethane	3.75	4.52	4.73	121	126	70.0-130			4.54	25
Dichlorodifluoromethane	3.75	4.27	3.95	114	105	64.0-139			7.79	25
1,1,2-Trichlorotrifluoroethane	3.75	3.94	3.00	105	80.0	70.0-130		J3	27.1	25
1,2-Dichlorotetrafluoroethane	3.75	4.07	4.09	109	109	70.0-130			0.490	25
Heptane	3.75	4.39	4.28	117	114	70.0-130			2.54	25
Hexachloro-1,3-butadiene	3.75	3.01	2.99	80.3	79.7	70.0-151			0.667	25
n-Hexane	3.75	3.70	3.75	98.7	100	70.0-130			1.34	25
Isopropylbenzene	3.75	3.28	3.20	87.5	85.3	70.0-130			2.47	25
Methylene Chloride	3.75	3.87	4.03	103	107	70.0-130			4.05	25
Methyl Butyl Ketone	3.75	3.32	3.28	88.5	87.5	70.0-149			1.21	25
2-Butanone (MEK)	3.75	3.70	3.74	98.7	99.7	70.0-130			1.08	25

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

(LCS) R3958208-1 08/08/23 09:24 • (LCSD) R3958208-3 08/08/23 10:50

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	3.75	3.45	3.36	92.0	89.6	70.0-139			2.64	25
Methyl methacrylate	3.75	3.67	3.60	97.9	96.0	70.0-130			1.93	25
MTBE	3.75	3.35	3.28	89.3	87.5	70.0-130			2.11	25
Naphthalene	3.75	3.10	3.11	82.7	82.9	70.0-159			0.322	25
2-Propanol	3.75	3.44	3.55	91.7	94.7	70.0-139			3.15	25
Propene	3.75	3.69	3.70	98.4	98.7	64.0-144			0.271	25
Styrene	3.75	3.67	3.65	97.9	97.3	70.0-130			0.546	25
1,1,2,2-Tetrachloroethane	3.75	4.05	4.04	108	108	70.0-130			0.247	25
Tetrachloroethylene	3.75	3.21	3.10	85.6	82.7	70.0-130			3.49	25
Tetrahydrofuran	3.75	3.74	3.67	99.7	97.9	70.0-137			1.89	25
Toluene	3.75	3.42	3.40	91.2	90.7	70.0-130			0.587	25
1,2,4-Trichlorobenzene	3.75	3.13	3.19	83.5	85.1	70.0-160			1.90	25
1,1,1-Trichloroethane	3.75	3.52	3.60	93.9	96.0	70.0-130			2.25	25
1,1,2-Trichloroethane	3.75	3.98	3.92	106	105	70.0-130			1.52	25
Trichloroethylene	3.75	3.58	3.53	95.5	94.1	70.0-130			1.41	25
1,2,4-Trimethylbenzene	3.75	3.53	3.47	94.1	92.5	70.0-130			1.71	25
1,3,5-Trimethylbenzene	3.75	3.65	3.59	97.3	95.7	70.0-130			1.66	25
2,2,4-Trimethylpentane	3.75	3.71	3.65	98.9	97.3	70.0-130			1.63	25
Vinyl chloride	3.75	4.28	4.60	114	123	70.0-130			7.21	25
Vinyl Bromide	3.75	4.37	4.48	117	119	70.0-130			2.49	25
Vinyl acetate	3.75	4.13	4.29	110	114	70.0-130			3.80	25
m&p-Xylene	7.50	6.76	6.63	90.1	88.4	70.0-130			1.94	25
o-Xylene	3.75	3.21	3.19	85.6	85.1	70.0-130			0.625	25
TPH (GC/MS) Low Fraction	188	172	173	91.5	92.0	70.0-130			0.580	25
(S) 1,4-Bromofluorobenzene				*97.7*	*97.9*	*60.0-140*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
NV5 - Wilsonville, OR

9450 SW Commerce Circle

Ste. 300

Billing Information:
Accounts Payable
9450 SW Commerce Circle

Ste. 300
Wilsonville, OR 97070

Report To:
Andre DeJonge

Email To:
Andre.DeJonge@nv5.com;Erik.Hedberg@nv5.com

Project Description: BigBeams-1-04

City/State Collected: Astoria, OR.

Please Circle: (PT) MT CT ET

Phone: **503-968-8787**

Client Project #: **BigBeams-1-04task 10**

Lab Project #: **GEODESPOR-BIGB104**

Collected by (print): Andre DeJonge

Site/Facility ID #:

P.O. #:

Collected by (signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Three Day
___ Next Day ___ Five Day
___ Two Day

Date Results Needed

Analysis: VOCs TO-15 Summa

Chain of Custody Page 1 of 1

Pace
PEOPLE ADVANCING SCIENCE
MT JULIET, TN
12065 Lebanon Road Mt Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1641056

G145

Acctnum: **GEODESPOR**
Template: **T234123**
Prelogin: **P1012225**
PM: 110 - Brian Ford
PB: CSL 07/19/23

Shipped Via: **FedEX Saver**

Sample ID	Can #	Flow Cont. #	Collection Date	Collection Time	Canister Pressure/Vacuum Initial	Canister Pressure/Vacuum Final	VOCs TO-15 Summa	Rem./Contaminant	Sample # (lab only)
VP-3	022849	009279	072723	1330	27	3	X		-01
VP-2	023186	005990	"	1345	30	4	X		-02
VP-1	022182	007826	"	1400	30	4	X		-03
VP-4	024758	024758	"	1415	30	4	X		-04

Sample Receipt Checklist
COC Seal Present/Intact: Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
RAD Screen <0.5 mR/hr: Y N
If Applicable
VOA Zero Headspace: Y N
Pres.Correct/Check: Y N

Remarks:

Relinquished by : (Signature) Date: 073123 Time: am

Relinquished by : (Signature) Date: Time:

Relinquished by : (Signature) Date: Time:

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

Received by: (Signature)

Received by: (Signature)

Received for lab by: (Signature)

Tracking #

Date: Time:

Date: Time:

Date: Time:

Hold #

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

NCF:

ANALYTICAL REPORT

August 16, 2023

NV5 - Wilsonville, OR

Sample Delivery Group:	L1641289
Samples Received:	08/01/2023
Project Number:	BigBeams-1-04task 10
Description:	ASTORIA WAREHOUSE

Report To:

Andre DeJonge
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Entire Report Reviewed By:

Brian Ford
Project Manager

TABLE OF CONTENTS

MW-3 L1641289-01 GW

Collected by: ANDRE DEJONGE | Collected date/time: 07/25/23 13:50 | Received date/time: 08/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2109502	1	08/08/23 11:24	08/08/23 11:24	NCC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2107839	1	08/05/23 01:57	08/05/23 01:57	GLN	Mt. Juliet, TN

MW-5 L1641289-02 GW

Collected by: ANDRE DEJONGE | Collected date/time: 07/25/23 15:40 | Received date/time: 08/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2110301	5	08/09/23 15:34	08/09/23 15:34	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2107839	1	08/05/23 02:18	08/05/23 02:18	JHH	Mt. Juliet, TN

MW-2 L1641289-03 GW

Collected by: ANDRE DEJONGE | Collected date/time: 07/25/23 17:10 | Received date/time: 08/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2109502	1	08/08/23 07:01	08/08/23 07:01	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2107839	1	08/05/23 02:40	08/05/23 02:40	GLN	Mt. Juliet, TN

MW-6 L1641289-04 GW

Collected by: ANDRE DEJONGE | Collected date/time: 07/26/23 11:35 | Received date/time: 08/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2109505	1	08/08/23 15:25	08/08/23 15:25	NCC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2107839	1	08/05/23 03:01	08/05/23 03:01	JHH	Mt. Juliet, TN

MW-7 L1641289-05 GW

Collected by: ANDRE DEJONGE | Collected date/time: 07/26/23 12:50 | Received date/time: 08/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2110284	5	08/09/23 16:17	08/09/23 16:17	GLN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2107839	1	08/05/23 03:21	08/05/23 03:21	GLN	Mt. Juliet, TN

MW-1 L1641289-06 GW

Collected by: ANDRE DEJONGE | Collected date/time: 07/26/23 15:20 | Received date/time: 08/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2109505	20	08/08/23 21:15	08/08/23 21:15	NCC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2107839	20	08/05/23 04:25	08/05/23 04:25	GLN	Mt. Juliet, TN

MW-4 L1641289-07 GW

Collected by: ANDRE DEJONGE | Collected date/time: 07/26/23 17:00 | Received date/time: 08/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2110284	5	08/09/23 16:38	08/09/23 16:38	GLN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2107839	1	08/05/23 03:42	08/05/23 03:42	GLN	Mt. Juliet, TN

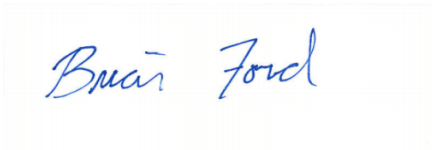
MW-8 L1641289-08 GW

Collected by: ANDRE DEJONGE
Collected date/time: 07/27/23 11:20
Received date/time: 08/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2110284	5	08/10/23 01:51	08/10/23 01:51	GLN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2107839	1	08/05/23 04:03	08/05/23 04:03	GLN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2113824	100	08/14/23 19:51	08/14/23 19:51	DYW	Mt. Juliet, TN

CASE NARRATIVE

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



Brian Ford
Project Manager

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	143		31.6	100	1	08/08/2023 11:24	WG2109502
(S) a,a,a-Trifluorotoluene(FID)	*94.3*			*78.0-120*		*08/08/2023 11:24*	WG2109502

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		11.3	50.0	1	08/05/2023 01:57	WG2107839
Acrolein	U		2.54	50.0	1	08/05/2023 01:57	WG2107839
Acrylonitrile	U		0.671	10.0	1	08/05/2023 01:57	WG2107839
Benzene	U		0.0941	1.00	1	08/05/2023 01:57	WG2107839
Bromobenzene	U		0.118	1.00	1	08/05/2023 01:57	WG2107839
Bromodichloromethane	U		0.136	1.00	1	08/05/2023 01:57	WG2107839
Bromoform	U		0.129	1.00	1	08/05/2023 01:57	WG2107839
Bromomethane	U		0.605	5.00	1	08/05/2023 01:57	WG2107839
n-Butylbenzene	U		0.157	1.00	1	08/05/2023 01:57	WG2107839
sec-Butylbenzene	0.254	J	0.125	1.00	1	08/05/2023 01:57	WG2107839
tert-Butylbenzene	U		0.127	1.00	1	08/05/2023 01:57	WG2107839
Carbon tetrachloride	U		0.128	1.00	1	08/05/2023 01:57	WG2107839
Chlorobenzene	U		0.116	1.00	1	08/05/2023 01:57	WG2107839
Chlorodibromomethane	U		0.140	1.00	1	08/05/2023 01:57	WG2107839
Chloroethane	U		0.192	5.00	1	08/05/2023 01:57	WG2107839
Chloroform	U		0.111	5.00	1	08/05/2023 01:57	WG2107839
Chloromethane	U		0.960	2.50	1	08/05/2023 01:57	WG2107839
2-Chlorotoluene	U		0.106	1.00	1	08/05/2023 01:57	WG2107839
4-Chlorotoluene	U		0.114	1.00	1	08/05/2023 01:57	WG2107839
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	08/05/2023 01:57	WG2107839
1,2-Dibromoethane	U		0.126	1.00	1	08/05/2023 01:57	WG2107839
Dibromomethane	U		0.122	1.00	1	08/05/2023 01:57	WG2107839
1,2-Dichlorobenzene	U		0.107	1.00	1	08/05/2023 01:57	WG2107839
1,3-Dichlorobenzene	U		0.110	1.00	1	08/05/2023 01:57	WG2107839
1,4-Dichlorobenzene	U		0.120	1.00	1	08/05/2023 01:57	WG2107839
Dichlorodifluoromethane	U		0.374	5.00	1	08/05/2023 01:57	WG2107839
1,1-Dichloroethane	U		0.100	1.00	1	08/05/2023 01:57	WG2107839
1,2-Dichloroethane	U		0.0819	1.00	1	08/05/2023 01:57	WG2107839
1,1-Dichloroethene	U		0.188	1.00	1	08/05/2023 01:57	WG2107839
cis-1,2-Dichloroethene	U		0.126	1.00	1	08/05/2023 01:57	WG2107839
trans-1,2-Dichloroethene	U		0.149	1.00	1	08/05/2023 01:57	WG2107839
1,2-Dichloropropane	U		0.149	1.00	1	08/05/2023 01:57	WG2107839
1,1-Dichloropropene	U		0.142	1.00	1	08/05/2023 01:57	WG2107839
1,3-Dichloropropane	U		0.110	1.00	1	08/05/2023 01:57	WG2107839
cis-1,3-Dichloropropene	U		0.111	1.00	1	08/05/2023 01:57	WG2107839
trans-1,3-Dichloropropene	U		0.118	1.00	1	08/05/2023 01:57	WG2107839
2,2-Dichloropropane	U		0.161	1.00	1	08/05/2023 01:57	WG2107839
Di-isopropyl ether	U		0.105	1.00	1	08/05/2023 01:57	WG2107839
Ethylbenzene	U		0.137	1.00	1	08/05/2023 01:57	WG2107839
Hexachloro-1,3-butadiene	U		0.337	1.00	1	08/05/2023 01:57	WG2107839
Isopropylbenzene	2.23		0.105	1.00	1	08/05/2023 01:57	WG2107839
p-Isopropyltoluene	U		0.120	1.00	1	08/05/2023 01:57	WG2107839
2-Butanone (MEK)	U		1.19	10.0	1	08/05/2023 01:57	WG2107839
Methylene Chloride	U		0.430	5.00	1	08/05/2023 01:57	WG2107839
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	08/05/2023 01:57	WG2107839
Methyl tert-butyl ether	2.22		0.101	1.00	1	08/05/2023 01:57	WG2107839
Naphthalene	U	C3	1.00	5.00	1	08/05/2023 01:57	WG2107839
n-Propylbenzene	4.33		0.0993	1.00	1	08/05/2023 01:57	WG2107839

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Styrene	U		0.118	1.00	1	08/05/2023 01:57	WG2107839
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	08/05/2023 01:57	WG2107839
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	08/05/2023 01:57	WG2107839
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	08/05/2023 01:57	WG2107839
Tetrachloroethene	U		0.300	1.00	1	08/05/2023 01:57	WG2107839
Toluene	U		0.278	1.00	1	08/05/2023 01:57	WG2107839
1,2,3-Trichlorobenzene	U		0.230	1.00	1	08/05/2023 01:57	WG2107839
1,2,4-Trichlorobenzene	U		0.481	1.00	1	08/05/2023 01:57	WG2107839
1,1,1-Trichloroethane	U		0.149	1.00	1	08/05/2023 01:57	WG2107839
1,1,2-Trichloroethane	U		0.158	1.00	1	08/05/2023 01:57	WG2107839
Trichloroethene	4.00		0.190	1.00	1	08/05/2023 01:57	WG2107839
Trichlorofluoromethane	U		0.160	5.00	1	08/05/2023 01:57	WG2107839
1,2,3-Trichloropropane	U		0.237	2.50	1	08/05/2023 01:57	WG2107839
1,2,4-Trimethylbenzene	U		0.322	1.00	1	08/05/2023 01:57	WG2107839
1,2,3-Trimethylbenzene	0.392	J	0.104	1.00	1	08/05/2023 01:57	WG2107839
1,3,5-Trimethylbenzene	0.195	J	0.104	1.00	1	08/05/2023 01:57	WG2107839
Vinyl chloride	U		0.234	1.00	1	08/05/2023 01:57	WG2107839
Xylenes, Total	0.481	J	0.174	3.00	1	08/05/2023 01:57	WG2107839
(S) Toluene-d8	*110*			*80.0-120*		*08/05/2023 01:57*	WG2107839
(S) 4-Bromofluorobenzene	*106*			*77.0-126*		*08/05/2023 01:57*	WG2107839
(S) 1,2-Dichloroethane-d4	*110*			*70.0-130*		*08/05/2023 01:57*	WG2107839

Sample Narrative:

L1641289-01 WG2107839: TCE biased high due to carryover.

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	2390	Q	158	500	5	08/09/2023 15:34	WG2110301
(S) a,a,a-Trifluorotoluene(FID)	*91.7*			*78.0-120*		*08/09/2023 15:34*	WG2110301

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		11.3	50.0	1	08/05/2023 02:18	WG2107839
Acrolein	U		2.54	50.0	1	08/05/2023 02:18	WG2107839
Acrylonitrile	U		0.671	10.0	1	08/05/2023 02:18	WG2107839
Benzene	24.5		0.0941	1.00	1	08/05/2023 02:18	WG2107839
Bromobenzene	U		0.118	1.00	1	08/05/2023 02:18	WG2107839
Bromodichloromethane	U		0.136	1.00	1	08/05/2023 02:18	WG2107839
Bromoform	U		0.129	1.00	1	08/05/2023 02:18	WG2107839
Bromomethane	U		0.605	5.00	1	08/05/2023 02:18	WG2107839
n-Butylbenzene	21.1		0.157	1.00	1	08/05/2023 02:18	WG2107839
sec-Butylbenzene	17.0		0.125	1.00	1	08/05/2023 02:18	WG2107839
tert-Butylbenzene	0.644	J	0.127	1.00	1	08/05/2023 02:18	WG2107839
Carbon tetrachloride	U		0.128	1.00	1	08/05/2023 02:18	WG2107839
Chlorobenzene	U		0.116	1.00	1	08/05/2023 02:18	WG2107839
Chlorodibromomethane	U		0.140	1.00	1	08/05/2023 02:18	WG2107839
Chloroethane	U		0.192	5.00	1	08/05/2023 02:18	WG2107839
Chloroform	U		0.111	5.00	1	08/05/2023 02:18	WG2107839
Chloromethane	U		0.960	2.50	1	08/05/2023 02:18	WG2107839
2-Chlorotoluene	U		0.106	1.00	1	08/05/2023 02:18	WG2107839
4-Chlorotoluene	U		0.114	1.00	1	08/05/2023 02:18	WG2107839
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	08/05/2023 02:18	WG2107839
1,2-Dibromoethane	U		0.126	1.00	1	08/05/2023 02:18	WG2107839
Dibromomethane	U		0.122	1.00	1	08/05/2023 02:18	WG2107839
1,2-Dichlorobenzene	U		0.107	1.00	1	08/05/2023 02:18	WG2107839
1,3-Dichlorobenzene	U		0.110	1.00	1	08/05/2023 02:18	WG2107839
1,4-Dichlorobenzene	U		0.120	1.00	1	08/05/2023 02:18	WG2107839
Dichlorodifluoromethane	U		0.374	5.00	1	08/05/2023 02:18	WG2107839
1,1-Dichloroethane	U		0.100	1.00	1	08/05/2023 02:18	WG2107839
1,2-Dichloroethane	U		0.0819	1.00	1	08/05/2023 02:18	WG2107839
1,1-Dichloroethene	U		0.188	1.00	1	08/05/2023 02:18	WG2107839
cis-1,2-Dichloroethene	U		0.126	1.00	1	08/05/2023 02:18	WG2107839
trans-1,2-Dichloroethene	U		0.149	1.00	1	08/05/2023 02:18	WG2107839
1,2-Dichloropropane	U		0.149	1.00	1	08/05/2023 02:18	WG2107839
1,1-Dichloropropene	U		0.142	1.00	1	08/05/2023 02:18	WG2107839
1,3-Dichloropropane	U		0.110	1.00	1	08/05/2023 02:18	WG2107839
cis-1,3-Dichloropropene	U		0.111	1.00	1	08/05/2023 02:18	WG2107839
trans-1,3-Dichloropropene	U		0.118	1.00	1	08/05/2023 02:18	WG2107839
2,2-Dichloropropane	U		0.161	1.00	1	08/05/2023 02:18	WG2107839
Di-isopropyl ether	U		0.105	1.00	1	08/05/2023 02:18	WG2107839
Ethylbenzene	151		0.137	1.00	1	08/05/2023 02:18	WG2107839
Hexachloro-1,3-butadiene	U		0.337	1.00	1	08/05/2023 02:18	WG2107839
Isopropylbenzene	43.6		0.105	1.00	1	08/05/2023 02:18	WG2107839
p-Isopropyltoluene	U		0.120	1.00	1	08/05/2023 02:18	WG2107839
2-Butanone (MEK)	U		1.19	10.0	1	08/05/2023 02:18	WG2107839
Methylene Chloride	U		0.430	5.00	1	08/05/2023 02:18	WG2107839
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	08/05/2023 02:18	WG2107839
Methyl tert-butyl ether	1.94		0.101	1.00	1	08/05/2023 02:18	WG2107839
Naphthalene	21.0	C3	1.00	5.00	1	08/05/2023 02:18	WG2107839
n-Propylbenzene	122		0.0993	1.00	1	08/05/2023 02:18	WG2107839

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Styrene	U		0.118	1.00	1	08/05/2023 02:18	WG2107839
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	08/05/2023 02:18	WG2107839
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	08/05/2023 02:18	WG2107839
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	08/05/2023 02:18	WG2107839
Tetrachloroethene	U		0.300	1.00	1	08/05/2023 02:18	WG2107839
Toluene	8.16		0.278	1.00	1	08/05/2023 02:18	WG2107839
1,2,3-Trichlorobenzene	U		0.230	1.00	1	08/05/2023 02:18	WG2107839
1,2,4-Trichlorobenzene	U		0.481	1.00	1	08/05/2023 02:18	WG2107839
1,1,1-Trichloroethane	U		0.149	1.00	1	08/05/2023 02:18	WG2107839
1,1,2-Trichloroethane	U		0.158	1.00	1	08/05/2023 02:18	WG2107839
Trichloroethene	U		0.190	1.00	1	08/05/2023 02:18	WG2107839
Trichlorofluoromethane	U		0.160	5.00	1	08/05/2023 02:18	WG2107839
1,2,3-Trichloropropane	U		0.237	2.50	1	08/05/2023 02:18	WG2107839
1,2,4-Trimethylbenzene	1.53		0.322	1.00	1	08/05/2023 02:18	WG2107839
1,2,3-Trimethylbenzene	15.9		0.104	1.00	1	08/05/2023 02:18	WG2107839
1,3,5-Trimethylbenzene	1.41		0.104	1.00	1	08/05/2023 02:18	WG2107839
Vinyl chloride	U		0.234	1.00	1	08/05/2023 02:18	WG2107839
Xylenes, Total	14.4		0.174	3.00	1	08/05/2023 02:18	WG2107839
(S) Toluene-d8	*115*			*80.0-120*		*08/05/2023 02:18*	WG2107839
(S) 4-Bromofluorobenzene	*119*			*77.0-126*		*08/05/2023 02:18*	WG2107839
(S) 1,2-Dichloroethane-d4	*117*			*70.0-130*		*08/05/2023 02:18*	WG2107839

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	2350		31.6	100	1	08/08/2023 07:01	WG2109502
(S) a,a,a-Trifluorotoluene(FID)	*89.3*			*78.0-120*		*08/08/2023 07:01*	WG2109502

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		11.3	50.0	1	08/05/2023 02:40	WG2107839
Acrolein	U		2.54	50.0	1	08/05/2023 02:40	WG2107839
Acrylonitrile	U		0.671	10.0	1	08/05/2023 02:40	WG2107839
Benzene	226	E	0.0941	1.00	1	08/05/2023 02:40	WG2107839
Bromobenzene	U		0.118	1.00	1	08/05/2023 02:40	WG2107839
Bromodichloromethane	U		0.136	1.00	1	08/05/2023 02:40	WG2107839
Bromoform	U		0.129	1.00	1	08/05/2023 02:40	WG2107839
Bromomethane	U		0.605	5.00	1	08/05/2023 02:40	WG2107839
n-Butylbenzene	7.15		0.157	1.00	1	08/05/2023 02:40	WG2107839
sec-Butylbenzene	4.59		0.125	1.00	1	08/05/2023 02:40	WG2107839
tert-Butylbenzene	0.753	J	0.127	1.00	1	08/05/2023 02:40	WG2107839
Carbon tetrachloride	U		0.128	1.00	1	08/05/2023 02:40	WG2107839
Chlorobenzene	U		0.116	1.00	1	08/05/2023 02:40	WG2107839
Chlorodibromomethane	U		0.140	1.00	1	08/05/2023 02:40	WG2107839
Chloroethane	U		0.192	5.00	1	08/05/2023 02:40	WG2107839
Chloroform	U		0.111	5.00	1	08/05/2023 02:40	WG2107839
Chloromethane	U		0.960	2.50	1	08/05/2023 02:40	WG2107839
2-Chlorotoluene	U		0.106	1.00	1	08/05/2023 02:40	WG2107839
4-Chlorotoluene	U		0.114	1.00	1	08/05/2023 02:40	WG2107839
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	08/05/2023 02:40	WG2107839
1,2-Dibromoethane	U		0.126	1.00	1	08/05/2023 02:40	WG2107839
Dibromomethane	U		0.122	1.00	1	08/05/2023 02:40	WG2107839
1,2-Dichlorobenzene	U		0.107	1.00	1	08/05/2023 02:40	WG2107839
1,3-Dichlorobenzene	U		0.110	1.00	1	08/05/2023 02:40	WG2107839
1,4-Dichlorobenzene	U		0.120	1.00	1	08/05/2023 02:40	WG2107839
Dichlorodifluoromethane	U		0.374	5.00	1	08/05/2023 02:40	WG2107839
1,1-Dichloroethane	U		0.100	1.00	1	08/05/2023 02:40	WG2107839
1,2-Dichloroethane	U		0.0819	1.00	1	08/05/2023 02:40	WG2107839
1,1-Dichloroethene	U		0.188	1.00	1	08/05/2023 02:40	WG2107839
cis-1,2-Dichloroethene	U		0.126	1.00	1	08/05/2023 02:40	WG2107839
trans-1,2-Dichloroethene	U		0.149	1.00	1	08/05/2023 02:40	WG2107839
1,2-Dichloropropane	U		0.149	1.00	1	08/05/2023 02:40	WG2107839
1,1-Dichloropropene	U		0.142	1.00	1	08/05/2023 02:40	WG2107839
1,3-Dichloropropane	U		0.110	1.00	1	08/05/2023 02:40	WG2107839
cis-1,3-Dichloropropene	U		0.111	1.00	1	08/05/2023 02:40	WG2107839
trans-1,3-Dichloropropene	U		0.118	1.00	1	08/05/2023 02:40	WG2107839
2,2-Dichloropropane	U		0.161	1.00	1	08/05/2023 02:40	WG2107839
Di-isopropyl ether	U		0.105	1.00	1	08/05/2023 02:40	WG2107839
Ethylbenzene	87.7		0.137	1.00	1	08/05/2023 02:40	WG2107839
Hexachloro-1,3-butadiene	U		0.337	1.00	1	08/05/2023 02:40	WG2107839
Isopropylbenzene	34.2		0.105	1.00	1	08/05/2023 02:40	WG2107839
p-Isopropyltoluene	0.718	J	0.120	1.00	1	08/05/2023 02:40	WG2107839
2-Butanone (MEK)	U		1.19	10.0	1	08/05/2023 02:40	WG2107839
Methylene Chloride	U		0.430	5.00	1	08/05/2023 02:40	WG2107839
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	08/05/2023 02:40	WG2107839
Methyl tert-butyl ether	7.15		0.101	1.00	1	08/05/2023 02:40	WG2107839
Naphthalene	46.8	C3	1.00	5.00	1	08/05/2023 02:40	WG2107839
n-Propylbenzene	61.8		0.0993	1.00	1	08/05/2023 02:40	WG2107839

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

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Styrene	U		0.118	1.00	1	08/05/2023 02:40	WG2107839
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	08/05/2023 02:40	WG2107839
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	08/05/2023 02:40	WG2107839
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	08/05/2023 02:40	WG2107839
Tetrachloroethene	U		0.300	1.00	1	08/05/2023 02:40	WG2107839
Toluene	9.88		0.278	1.00	1	08/05/2023 02:40	WG2107839
1,2,3-Trichlorobenzene	U		0.230	1.00	1	08/05/2023 02:40	WG2107839
1,2,4-Trichlorobenzene	U		0.481	1.00	1	08/05/2023 02:40	WG2107839
1,1,1-Trichloroethane	U		0.149	1.00	1	08/05/2023 02:40	WG2107839
1,1,2-Trichloroethane	U		0.158	1.00	1	08/05/2023 02:40	WG2107839
Trichloroethene	U		0.190	1.00	1	08/05/2023 02:40	WG2107839
Trichlorofluoromethane	U		0.160	5.00	1	08/05/2023 02:40	WG2107839
1,2,3-Trichloropropane	U		0.237	2.50	1	08/05/2023 02:40	WG2107839
1,2,4-Trimethylbenzene	14.2		0.322	1.00	1	08/05/2023 02:40	WG2107839
1,2,3-Trimethylbenzene	59.6		0.104	1.00	1	08/05/2023 02:40	WG2107839
1,3,5-Trimethylbenzene	22.1		0.104	1.00	1	08/05/2023 02:40	WG2107839
Vinyl chloride	U		0.234	1.00	1	08/05/2023 02:40	WG2107839
Xylenes, Total	34.2		0.174	3.00	1	08/05/2023 02:40	WG2107839
(S) Toluene-d8	*112*			*80.0-120*		*08/05/2023 02:40*	WG2107839
(S) 4-Bromofluorobenzene	*115*			*77.0-126*		*08/05/2023 02:40*	WG2107839
(S) 1,2-Dichloroethane-d4	*104*			*70.0-130*		*08/05/2023 02:40*	WG2107839

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	1740		31.6	100	1	08/08/2023 15:25	WG2109505
(S) a,a,a-Trifluorotoluene(FID)	*90.1*			*78.0-120*		*08/08/2023 15:25*	WG2109505

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		11.3	50.0	1	08/05/2023 03:01	WG2107839
Acrolein	U		2.54	50.0	1	08/05/2023 03:01	WG2107839
Acrylonitrile	U		0.671	10.0	1	08/05/2023 03:01	WG2107839
Benzene	146		0.0941	1.00	1	08/05/2023 03:01	WG2107839
Bromobenzene	U		0.118	1.00	1	08/05/2023 03:01	WG2107839
Bromodichloromethane	U		0.136	1.00	1	08/05/2023 03:01	WG2107839
Bromoform	U		0.129	1.00	1	08/05/2023 03:01	WG2107839
Bromomethane	U		0.605	5.00	1	08/05/2023 03:01	WG2107839
n-Butylbenzene	4.62		0.157	1.00	1	08/05/2023 03:01	WG2107839
sec-Butylbenzene	3.37		0.125	1.00	1	08/05/2023 03:01	WG2107839
tert-Butylbenzene	0.608	J	0.127	1.00	1	08/05/2023 03:01	WG2107839
Carbon tetrachloride	U		0.128	1.00	1	08/05/2023 03:01	WG2107839
Chlorobenzene	U		0.116	1.00	1	08/05/2023 03:01	WG2107839
Chlorodibromomethane	U		0.140	1.00	1	08/05/2023 03:01	WG2107839
Chloroethane	U		0.192	5.00	1	08/05/2023 03:01	WG2107839
Chloroform	U		0.111	5.00	1	08/05/2023 03:01	WG2107839
Chloromethane	U		0.960	2.50	1	08/05/2023 03:01	WG2107839
2-Chlorotoluene	U		0.106	1.00	1	08/05/2023 03:01	WG2107839
4-Chlorotoluene	U		0.114	1.00	1	08/05/2023 03:01	WG2107839
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	08/05/2023 03:01	WG2107839
1,2-Dibromoethane	U		0.126	1.00	1	08/05/2023 03:01	WG2107839
Dibromomethane	U		0.122	1.00	1	08/05/2023 03:01	WG2107839
1,2-Dichlorobenzene	U		0.107	1.00	1	08/05/2023 03:01	WG2107839
1,3-Dichlorobenzene	U		0.110	1.00	1	08/05/2023 03:01	WG2107839
1,4-Dichlorobenzene	U		0.120	1.00	1	08/05/2023 03:01	WG2107839
Dichlorodifluoromethane	U		0.374	5.00	1	08/05/2023 03:01	WG2107839
1,1-Dichloroethane	U		0.100	1.00	1	08/05/2023 03:01	WG2107839
1,2-Dichloroethane	U		0.0819	1.00	1	08/05/2023 03:01	WG2107839
1,1-Dichloroethene	U		0.188	1.00	1	08/05/2023 03:01	WG2107839
cis-1,2-Dichloroethene	U		0.126	1.00	1	08/05/2023 03:01	WG2107839
trans-1,2-Dichloroethene	U		0.149	1.00	1	08/05/2023 03:01	WG2107839
1,2-Dichloropropane	U		0.149	1.00	1	08/05/2023 03:01	WG2107839
1,1-Dichloropropene	U		0.142	1.00	1	08/05/2023 03:01	WG2107839
1,3-Dichloropropane	U		0.110	1.00	1	08/05/2023 03:01	WG2107839
cis-1,3-Dichloropropene	U		0.111	1.00	1	08/05/2023 03:01	WG2107839
trans-1,3-Dichloropropene	U		0.118	1.00	1	08/05/2023 03:01	WG2107839
2,2-Dichloropropane	U		0.161	1.00	1	08/05/2023 03:01	WG2107839
Di-isopropyl ether	U		0.105	1.00	1	08/05/2023 03:01	WG2107839
Ethylbenzene	131		0.137	1.00	1	08/05/2023 03:01	WG2107839
Hexachloro-1,3-butadiene	U		0.337	1.00	1	08/05/2023 03:01	WG2107839
Isopropylbenzene	25.0		0.105	1.00	1	08/05/2023 03:01	WG2107839
p-Isopropyltoluene	0.820	J	0.120	1.00	1	08/05/2023 03:01	WG2107839
2-Butanone (MEK)	U		1.19	10.0	1	08/05/2023 03:01	WG2107839
Methylene Chloride	U		0.430	5.00	1	08/05/2023 03:01	WG2107839
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	08/05/2023 03:01	WG2107839
Methyl tert-butyl ether	15.0		0.101	1.00	1	08/05/2023 03:01	WG2107839
Naphthalene	49.3	C3	1.00	5.00	1	08/05/2023 03:01	WG2107839
n-Propylbenzene	58.2		0.0993	1.00	1	08/05/2023 03:01	WG2107839

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

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Styrene	U		0.118	1.00	1	08/05/2023 03:01	WG2107839
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	08/05/2023 03:01	WG2107839
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	08/05/2023 03:01	WG2107839
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	08/05/2023 03:01	WG2107839
Tetrachloroethene	U		0.300	1.00	1	08/05/2023 03:01	WG2107839
Toluene	5.46		0.278	1.00	1	08/05/2023 03:01	WG2107839
1,2,3-Trichlorobenzene	U		0.230	1.00	1	08/05/2023 03:01	WG2107839
1,2,4-Trichlorobenzene	U		0.481	1.00	1	08/05/2023 03:01	WG2107839
1,1,1-Trichloroethane	U		0.149	1.00	1	08/05/2023 03:01	WG2107839
1,1,2-Trichloroethane	U		0.158	1.00	1	08/05/2023 03:01	WG2107839
Trichloroethene	U		0.190	1.00	1	08/05/2023 03:01	WG2107839
Trichlorofluoromethane	U		0.160	5.00	1	08/05/2023 03:01	WG2107839
1,2,3-Trichloropropane	U		0.237	2.50	1	08/05/2023 03:01	WG2107839
1,2,4-Trimethylbenzene	20.2		0.322	1.00	1	08/05/2023 03:01	WG2107839
1,2,3-Trimethylbenzene	65.4		0.104	1.00	1	08/05/2023 03:01	WG2107839
1,3,5-Trimethylbenzene	32.2		0.104	1.00	1	08/05/2023 03:01	WG2107839
Vinyl chloride	U		0.234	1.00	1	08/05/2023 03:01	WG2107839
Xylenes, Total	53.9		0.174	3.00	1	08/05/2023 03:01	WG2107839
(S) Toluene-d8	*119*			*80.0-120*		*08/05/2023 03:01*	WG2107839
(S) 4-Bromofluorobenzene	*116*			*77.0-126*		*08/05/2023 03:01*	WG2107839
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*		*08/05/2023 03:01*	WG2107839

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	6140		158	500	5	08/09/2023 16:17	WG2110284
(S) a,a,a-Trifluorotoluene(FID)	*90.7*			*78.0-120*		*08/09/2023 16:17*	WG2110284

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		11.3	50.0	1	08/05/2023 03:21	WG2107839
Acrolein	U		2.54	50.0	1	08/05/2023 03:21	WG2107839
Acrylonitrile	U		0.671	10.0	1	08/05/2023 03:21	WG2107839
Benzene	235	E	0.0941	1.00	1	08/05/2023 03:21	WG2107839
Bromobenzene	U		0.118	1.00	1	08/05/2023 03:21	WG2107839
Bromodichloromethane	U		0.136	1.00	1	08/05/2023 03:21	WG2107839
Bromoform	U		0.129	1.00	1	08/05/2023 03:21	WG2107839
Bromomethane	U		0.605	5.00	1	08/05/2023 03:21	WG2107839
n-Butylbenzene	20.3		0.157	1.00	1	08/05/2023 03:21	WG2107839
sec-Butylbenzene	16.3		0.125	1.00	1	08/05/2023 03:21	WG2107839
tert-Butylbenzene	1.31		0.127	1.00	1	08/05/2023 03:21	WG2107839
Carbon tetrachloride	U		0.128	1.00	1	08/05/2023 03:21	WG2107839
Chlorobenzene	U		0.116	1.00	1	08/05/2023 03:21	WG2107839
Chlorodibromomethane	U		0.140	1.00	1	08/05/2023 03:21	WG2107839
Chloroethane	U		0.192	5.00	1	08/05/2023 03:21	WG2107839
Chloroform	U		0.111	5.00	1	08/05/2023 03:21	WG2107839
Chloromethane	U		0.960	2.50	1	08/05/2023 03:21	WG2107839
2-Chlorotoluene	U		0.106	1.00	1	08/05/2023 03:21	WG2107839
4-Chlorotoluene	U		0.114	1.00	1	08/05/2023 03:21	WG2107839
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	08/05/2023 03:21	WG2107839
1,2-Dibromoethane	U		0.126	1.00	1	08/05/2023 03:21	WG2107839
Dibromomethane	U		0.122	1.00	1	08/05/2023 03:21	WG2107839
1,2-Dichlorobenzene	U		0.107	1.00	1	08/05/2023 03:21	WG2107839
1,3-Dichlorobenzene	U		0.110	1.00	1	08/05/2023 03:21	WG2107839
1,4-Dichlorobenzene	U		0.120	1.00	1	08/05/2023 03:21	WG2107839
Dichlorodifluoromethane	U		0.374	5.00	1	08/05/2023 03:21	WG2107839
1,1-Dichloroethane	U		0.100	1.00	1	08/05/2023 03:21	WG2107839
1,2-Dichloroethane	U		0.0819	1.00	1	08/05/2023 03:21	WG2107839
1,1-Dichloroethene	U		0.188	1.00	1	08/05/2023 03:21	WG2107839
cis-1,2-Dichloroethene	U		0.126	1.00	1	08/05/2023 03:21	WG2107839
trans-1,2-Dichloroethene	U		0.149	1.00	1	08/05/2023 03:21	WG2107839
1,2-Dichloropropane	U		0.149	1.00	1	08/05/2023 03:21	WG2107839
1,1-Dichloropropene	U		0.142	1.00	1	08/05/2023 03:21	WG2107839
1,3-Dichloropropane	U		0.110	1.00	1	08/05/2023 03:21	WG2107839
cis-1,3-Dichloropropene	U		0.111	1.00	1	08/05/2023 03:21	WG2107839
trans-1,3-Dichloropropene	U		0.118	1.00	1	08/05/2023 03:21	WG2107839
2,2-Dichloropropane	U		0.161	1.00	1	08/05/2023 03:21	WG2107839
Di-isopropyl ether	U		0.105	1.00	1	08/05/2023 03:21	WG2107839
Ethylbenzene	82.5		0.137	1.00	1	08/05/2023 03:21	WG2107839
Hexachloro-1,3-butadiene	U		0.337	1.00	1	08/05/2023 03:21	WG2107839
Isopropylbenzene	166		0.105	1.00	1	08/05/2023 03:21	WG2107839
p-Isopropyltoluene	0.871	J	0.120	1.00	1	08/05/2023 03:21	WG2107839
2-Butanone (MEK)	U		1.19	10.0	1	08/05/2023 03:21	WG2107839
Methylene Chloride	U		0.430	5.00	1	08/05/2023 03:21	WG2107839
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	08/05/2023 03:21	WG2107839
Methyl tert-butyl ether	7.33		0.101	1.00	1	08/05/2023 03:21	WG2107839
Naphthalene	18.0	C3	1.00	5.00	1	08/05/2023 03:21	WG2107839
n-Propylbenzene	347	E	0.0993	1.00	1	08/05/2023 03:21	WG2107839

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Styrene	U		0.118	1.00	1	08/05/2023 03:21	WG2107839
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	08/05/2023 03:21	WG2107839
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	08/05/2023 03:21	WG2107839
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	08/05/2023 03:21	WG2107839
Tetrachloroethene	U		0.300	1.00	1	08/05/2023 03:21	WG2107839
Toluene	23.7		0.278	1.00	1	08/05/2023 03:21	WG2107839
1,2,3-Trichlorobenzene	U		0.230	1.00	1	08/05/2023 03:21	WG2107839
1,2,4-Trichlorobenzene	U		0.481	1.00	1	08/05/2023 03:21	WG2107839
1,1,1-Trichloroethane	U		0.149	1.00	1	08/05/2023 03:21	WG2107839
1,1,2-Trichloroethane	U		0.158	1.00	1	08/05/2023 03:21	WG2107839
Trichloroethene	U		0.190	1.00	1	08/05/2023 03:21	WG2107839
Trichlorofluoromethane	U		0.160	5.00	1	08/05/2023 03:21	WG2107839
1,2,3-Trichloropropane	U		0.237	2.50	1	08/05/2023 03:21	WG2107839
1,2,4-Trimethylbenzene	12.2		0.322	1.00	1	08/05/2023 03:21	WG2107839
1,2,3-Trimethylbenzene	35.4		0.104	1.00	1	08/05/2023 03:21	WG2107839
1,3,5-Trimethylbenzene	6.28		0.104	1.00	1	08/05/2023 03:21	WG2107839
Vinyl chloride	U		0.234	1.00	1	08/05/2023 03:21	WG2107839
Xylenes, Total	71.6		0.174	3.00	1	08/05/2023 03:21	WG2107839
(S) Toluene-d8	*115*			*80.0-120*		*08/05/2023 03:21*	WG2107839
(S) 4-Bromofluorobenzene	*117*			*77.0-126*		*08/05/2023 03:21*	WG2107839
(S) 1,2-Dichloroethane-d4	*111*			*70.0-130*		*08/05/2023 03:21*	WG2107839

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

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	21200		632	2000	20	08/08/2023 21:15	WG2109505
(S) a,a,a-Trifluorotoluene(FID)	*94.5*			*78.0-120*		*08/08/2023 21:15*	WG2109505

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		226	1000	20	08/05/2023 04:25	WG2107839
Acrolein	U		50.8	1000	20	08/05/2023 04:25	WG2107839
Acrylonitrile	U		13.4	200	20	08/05/2023 04:25	WG2107839
Benzene	533		1.88	20.0	20	08/05/2023 04:25	WG2107839
Bromobenzene	U		2.36	20.0	20	08/05/2023 04:25	WG2107839
Bromodichloromethane	U		2.72	20.0	20	08/05/2023 04:25	WG2107839
Bromoform	U		2.58	20.0	20	08/05/2023 04:25	WG2107839
Bromomethane	U		12.1	100	20	08/05/2023 04:25	WG2107839
n-Butylbenzene	27.8		3.14	20.0	20	08/05/2023 04:25	WG2107839
sec-Butylbenzene	21.4		2.50	20.0	20	08/05/2023 04:25	WG2107839
tert-Butylbenzene	U		2.54	20.0	20	08/05/2023 04:25	WG2107839
Carbon tetrachloride	U		2.56	20.0	20	08/05/2023 04:25	WG2107839
Chlorobenzene	U		2.32	20.0	20	08/05/2023 04:25	WG2107839
Chlorodibromomethane	U		2.80	20.0	20	08/05/2023 04:25	WG2107839
Chloroethane	U		3.84	100	20	08/05/2023 04:25	WG2107839
Chloroform	U		2.22	100	20	08/05/2023 04:25	WG2107839
Chloromethane	U		19.2	50.0	20	08/05/2023 04:25	WG2107839
2-Chlorotoluene	U		2.12	20.0	20	08/05/2023 04:25	WG2107839
4-Chlorotoluene	U		2.28	20.0	20	08/05/2023 04:25	WG2107839
1,2-Dibromo-3-Chloropropane	U		5.52	100	20	08/05/2023 04:25	WG2107839
1,2-Dibromoethane	U		2.52	20.0	20	08/05/2023 04:25	WG2107839
Dibromomethane	U		2.44	20.0	20	08/05/2023 04:25	WG2107839
1,2-Dichlorobenzene	U		2.14	20.0	20	08/05/2023 04:25	WG2107839
1,3-Dichlorobenzene	U		2.20	20.0	20	08/05/2023 04:25	WG2107839
1,4-Dichlorobenzene	U		2.40	20.0	20	08/05/2023 04:25	WG2107839
Dichlorodifluoromethane	U		7.48	100	20	08/05/2023 04:25	WG2107839
1,1-Dichloroethane	U		2.00	20.0	20	08/05/2023 04:25	WG2107839
1,2-Dichloroethane	U		1.64	20.0	20	08/05/2023 04:25	WG2107839
1,1-Dichloroethene	U		3.76	20.0	20	08/05/2023 04:25	WG2107839
cis-1,2-Dichloroethene	U		2.52	20.0	20	08/05/2023 04:25	WG2107839
trans-1,2-Dichloroethene	U		2.98	20.0	20	08/05/2023 04:25	WG2107839
1,2-Dichloropropane	U		2.98	20.0	20	08/05/2023 04:25	WG2107839
1,1-Dichloropropene	U		2.84	20.0	20	08/05/2023 04:25	WG2107839
1,3-Dichloropropane	U		2.20	20.0	20	08/05/2023 04:25	WG2107839
cis-1,3-Dichloropropene	U		2.22	20.0	20	08/05/2023 04:25	WG2107839
trans-1,3-Dichloropropene	U		2.36	20.0	20	08/05/2023 04:25	WG2107839
2,2-Dichloropropane	U		3.22	20.0	20	08/05/2023 04:25	WG2107839
Di-isopropyl ether	U		2.10	20.0	20	08/05/2023 04:25	WG2107839
Ethylbenzene	3950		2.74	20.0	20	08/05/2023 04:25	WG2107839
Hexachloro-1,3-butadiene	U		6.74	20.0	20	08/05/2023 04:25	WG2107839
Isopropylbenzene	198		2.10	20.0	20	08/05/2023 04:25	WG2107839
p-Isopropyltoluene	4.22	J	2.40	20.0	20	08/05/2023 04:25	WG2107839
2-Butanone (MEK)	U		23.8	200	20	08/05/2023 04:25	WG2107839
Methylene Chloride	U		8.60	100	20	08/05/2023 04:25	WG2107839
4-Methyl-2-pentanone (MIBK)	U		9.56	200	20	08/05/2023 04:25	WG2107839
Methyl tert-butyl ether	7.62	J	2.02	20.0	20	08/05/2023 04:25	WG2107839
Naphthalene	1050	C3	20.0	100	20	08/05/2023 04:25	WG2107839
n-Propylbenzene	524		1.99	20.0	20	08/05/2023 04:25	WG2107839

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Styrene	U		2.36	20.0	20	08/05/2023 04:25	WG2107839
1,1,1,2-Tetrachloroethane	U		2.94	20.0	20	08/05/2023 04:25	WG2107839
1,1,2,2-Tetrachloroethane	U		2.66	20.0	20	08/05/2023 04:25	WG2107839
1,1,2-Trichlorotrifluoroethane	U		3.60	20.0	20	08/05/2023 04:25	WG2107839
Tetrachloroethene	U		6.00	20.0	20	08/05/2023 04:25	WG2107839
Toluene	26.4		5.56	20.0	20	08/05/2023 04:25	WG2107839
1,2,3-Trichlorobenzene	U		4.60	20.0	20	08/05/2023 04:25	WG2107839
1,2,4-Trichlorobenzene	U		9.62	20.0	20	08/05/2023 04:25	WG2107839
1,1,1-Trichloroethane	U		2.98	20.0	20	08/05/2023 04:25	WG2107839
1,1,2-Trichloroethane	U		3.16	20.0	20	08/05/2023 04:25	WG2107839
Trichloroethene	U		3.80	20.0	20	08/05/2023 04:25	WG2107839
Trichlorofluoromethane	U		3.20	100	20	08/05/2023 04:25	WG2107839
1,2,3-Trichloropropane	U		4.74	50.0	20	08/05/2023 04:25	WG2107839
1,2,4-Trimethylbenzene	74.9		6.44	20.0	20	08/05/2023 04:25	WG2107839
1,2,3-Trimethylbenzene	656		2.08	20.0	20	08/05/2023 04:25	WG2107839
1,3,5-Trimethylbenzene	32.8		2.08	20.0	20	08/05/2023 04:25	WG2107839
Vinyl chloride	U		4.68	20.0	20	08/05/2023 04:25	WG2107839
Xylenes, Total	116		3.48	60.0	20	08/05/2023 04:25	WG2107839
(S) Toluene-d8	*125*	J1		*80.0-120*		*08/05/2023 04:25*	WG2107839
(S) 4-Bromofluorobenzene	*121*			*77.0-126*		*08/05/2023 04:25*	WG2107839
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*		*08/05/2023 04:25*	WG2107839

Sample Narrative:

L1641289-06 WG2107839: 124TMB,135TMB,xylene biased high due to carryover.

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

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	16000		158	500	5	08/09/2023 16:38	WG2110284
(S) a,a,a-Trifluorotoluene(FID)	*87.8*			*78.0-120*		*08/09/2023 16:38*	WG2110284

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		11.3	50.0	1	08/05/2023 03:42	WG2107839
Acrolein	U		2.54	50.0	1	08/05/2023 03:42	WG2107839
Acrylonitrile	U		0.671	10.0	1	08/05/2023 03:42	WG2107839
Benzene	465	E	0.0941	1.00	1	08/05/2023 03:42	WG2107839
Bromobenzene	U		0.118	1.00	1	08/05/2023 03:42	WG2107839
Bromodichloromethane	U		0.136	1.00	1	08/05/2023 03:42	WG2107839
Bromoform	U		0.129	1.00	1	08/05/2023 03:42	WG2107839
Bromomethane	U		0.605	5.00	1	08/05/2023 03:42	WG2107839
n-Butylbenzene	19.5		0.157	1.00	1	08/05/2023 03:42	WG2107839
sec-Butylbenzene	13.0		0.125	1.00	1	08/05/2023 03:42	WG2107839
tert-Butylbenzene	1.04		0.127	1.00	1	08/05/2023 03:42	WG2107839
Carbon tetrachloride	U		0.128	1.00	1	08/05/2023 03:42	WG2107839
Chlorobenzene	U		0.116	1.00	1	08/05/2023 03:42	WG2107839
Chlorodibromomethane	U		0.140	1.00	1	08/05/2023 03:42	WG2107839
Chloroethane	U		0.192	5.00	1	08/05/2023 03:42	WG2107839
Chloroform	U		0.111	5.00	1	08/05/2023 03:42	WG2107839
Chloromethane	U		0.960	2.50	1	08/05/2023 03:42	WG2107839
2-Chlorotoluene	U		0.106	1.00	1	08/05/2023 03:42	WG2107839
4-Chlorotoluene	U		0.114	1.00	1	08/05/2023 03:42	WG2107839
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	08/05/2023 03:42	WG2107839
1,2-Dibromoethane	U		0.126	1.00	1	08/05/2023 03:42	WG2107839
Dibromomethane	U		0.122	1.00	1	08/05/2023 03:42	WG2107839
1,2-Dichlorobenzene	U		0.107	1.00	1	08/05/2023 03:42	WG2107839
1,3-Dichlorobenzene	U		0.110	1.00	1	08/05/2023 03:42	WG2107839
1,4-Dichlorobenzene	U		0.120	1.00	1	08/05/2023 03:42	WG2107839
Dichlorodifluoromethane	U		0.374	5.00	1	08/05/2023 03:42	WG2107839
1,1-Dichloroethane	U		0.100	1.00	1	08/05/2023 03:42	WG2107839
1,2-Dichloroethane	U		0.0819	1.00	1	08/05/2023 03:42	WG2107839
1,1-Dichloroethene	U		0.188	1.00	1	08/05/2023 03:42	WG2107839
cis-1,2-Dichloroethene	U		0.126	1.00	1	08/05/2023 03:42	WG2107839
trans-1,2-Dichloroethene	U		0.149	1.00	1	08/05/2023 03:42	WG2107839
1,2-Dichloropropane	U		0.149	1.00	1	08/05/2023 03:42	WG2107839
1,1-Dichloropropene	U		0.142	1.00	1	08/05/2023 03:42	WG2107839
1,3-Dichloropropane	U		0.110	1.00	1	08/05/2023 03:42	WG2107839
cis-1,3-Dichloropropene	U		0.111	1.00	1	08/05/2023 03:42	WG2107839
trans-1,3-Dichloropropene	U		0.118	1.00	1	08/05/2023 03:42	WG2107839
2,2-Dichloropropane	U		0.161	1.00	1	08/05/2023 03:42	WG2107839
Di-isopropyl ether	U		0.105	1.00	1	08/05/2023 03:42	WG2107839
Ethylbenzene	1220	E	0.137	1.00	1	08/05/2023 03:42	WG2107839
Hexachloro-1,3-butadiene	U		0.337	1.00	1	08/05/2023 03:42	WG2107839
Isopropylbenzene	120		0.105	1.00	1	08/05/2023 03:42	WG2107839
p-Isopropyltoluene	4.66		0.120	1.00	1	08/05/2023 03:42	WG2107839
2-Butanone (MEK)	U		1.19	10.0	1	08/05/2023 03:42	WG2107839
Methylene Chloride	U		0.430	5.00	1	08/05/2023 03:42	WG2107839
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	08/05/2023 03:42	WG2107839
Methyl tert-butyl ether	2.22		0.101	1.00	1	08/05/2023 03:42	WG2107839
Naphthalene	450	C3 E	1.00	5.00	1	08/05/2023 03:42	WG2107839
n-Propylbenzene	290	E	0.0993	1.00	1	08/05/2023 03:42	WG2107839

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Styrene	U		0.118	1.00	1	08/05/2023 03:42	WG2107839
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	08/05/2023 03:42	WG2107839
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	08/05/2023 03:42	WG2107839
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	08/05/2023 03:42	WG2107839
Tetrachloroethene	U		0.300	1.00	1	08/05/2023 03:42	WG2107839
Toluene	70.0		0.278	1.00	1	08/05/2023 03:42	WG2107839
1,2,3-Trichlorobenzene	U		0.230	1.00	1	08/05/2023 03:42	WG2107839
1,2,4-Trichlorobenzene	U		0.481	1.00	1	08/05/2023 03:42	WG2107839
1,1,1-Trichloroethane	U		0.149	1.00	1	08/05/2023 03:42	WG2107839
1,1,2-Trichloroethane	U		0.158	1.00	1	08/05/2023 03:42	WG2107839
Trichloroethene	U		0.190	1.00	1	08/05/2023 03:42	WG2107839
Trichlorofluoromethane	U		0.160	5.00	1	08/05/2023 03:42	WG2107839
1,2,3-Trichloropropane	U		0.237	2.50	1	08/05/2023 03:42	WG2107839
1,2,4-Trimethylbenzene	489	E	0.322	1.00	1	08/05/2023 03:42	WG2107839
1,2,3-Trimethylbenzene	469	E	0.104	1.00	1	08/05/2023 03:42	WG2107839
1,3,5-Trimethylbenzene	65.3		0.104	1.00	1	08/05/2023 03:42	WG2107839
Vinyl chloride	U		0.234	1.00	1	08/05/2023 03:42	WG2107839
Xylenes, Total	1320		0.174	3.00	1	08/05/2023 03:42	WG2107839
(S) Toluene-d8	*128*	J1		*80.0-120*		*08/05/2023 03:42*	WG2107839
(S) 4-Bromofluorobenzene	*133*	J1		*77.0-126*		*08/05/2023 03:42*	WG2107839
(S) 1,2-Dichloroethane-d4	*111*			*70.0-130*		*08/05/2023 03:42*	WG2107839

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	16200		158	500	5	08/10/2023 01:51	WG2110284
(S) a,a,a-Trifluorotoluene(FID)	*90.1*			*78.0-120*		*08/10/2023 01:51*	WG2110284

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		11.3	50.0	1	08/05/2023 04:03	WG2107839
Acrolein	U		2.54	50.0	1	08/05/2023 04:03	WG2107839
Acrylonitrile	U		0.671	10.0	1	08/05/2023 04:03	WG2107839
Benzene	1970	Q	9.41	100	100	08/14/2023 19:51	WG2113824
Bromobenzene	U		0.118	1.00	1	08/05/2023 04:03	WG2107839
Bromodichloromethane	U		0.136	1.00	1	08/05/2023 04:03	WG2107839
Bromoform	U		0.129	1.00	1	08/05/2023 04:03	WG2107839
Bromomethane	U		0.605	5.00	1	08/05/2023 04:03	WG2107839
n-Butylbenzene	21.4		0.157	1.00	1	08/05/2023 04:03	WG2107839
sec-Butylbenzene	15.5		0.125	1.00	1	08/05/2023 04:03	WG2107839
tert-Butylbenzene	0.971	J	0.127	1.00	1	08/05/2023 04:03	WG2107839
Carbon tetrachloride	U		0.128	1.00	1	08/05/2023 04:03	WG2107839
Chlorobenzene	U		0.116	1.00	1	08/05/2023 04:03	WG2107839
Chlorodibromomethane	U		0.140	1.00	1	08/05/2023 04:03	WG2107839
Chloroethane	U		0.192	5.00	1	08/05/2023 04:03	WG2107839
Chloroform	U		0.111	5.00	1	08/05/2023 04:03	WG2107839
Chloromethane	U		0.960	2.50	1	08/05/2023 04:03	WG2107839
2-Chlorotoluene	U		0.106	1.00	1	08/05/2023 04:03	WG2107839
4-Chlorotoluene	U		0.114	1.00	1	08/05/2023 04:03	WG2107839
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	08/05/2023 04:03	WG2107839
1,2-Dibromoethane	U		0.126	1.00	1	08/05/2023 04:03	WG2107839
Dibromomethane	U		0.122	1.00	1	08/05/2023 04:03	WG2107839
1,2-Dichlorobenzene	U		0.107	1.00	1	08/05/2023 04:03	WG2107839
1,3-Dichlorobenzene	U		0.110	1.00	1	08/05/2023 04:03	WG2107839
1,4-Dichlorobenzene	U		0.120	1.00	1	08/05/2023 04:03	WG2107839
Dichlorodifluoromethane	U		0.374	5.00	1	08/05/2023 04:03	WG2107839
1,1-Dichloroethane	U		0.100	1.00	1	08/05/2023 04:03	WG2107839
1,2-Dichloroethane	U		0.0819	1.00	1	08/05/2023 04:03	WG2107839
1,1-Dichloroethene	U		0.188	1.00	1	08/05/2023 04:03	WG2107839
cis-1,2-Dichloroethene	U		0.126	1.00	1	08/05/2023 04:03	WG2107839
trans-1,2-Dichloroethene	U		0.149	1.00	1	08/05/2023 04:03	WG2107839
1,2-Dichloropropane	U		0.149	1.00	1	08/05/2023 04:03	WG2107839
1,1-Dichloropropene	U		0.142	1.00	1	08/05/2023 04:03	WG2107839
1,3-Dichloropropane	U		0.110	1.00	1	08/05/2023 04:03	WG2107839
cis-1,3-Dichloropropene	U		0.111	1.00	1	08/05/2023 04:03	WG2107839
trans-1,3-Dichloropropene	U		0.118	1.00	1	08/05/2023 04:03	WG2107839
2,2-Dichloropropane	U		0.161	1.00	1	08/05/2023 04:03	WG2107839
Di-isopropyl ether	U		0.105	1.00	1	08/05/2023 04:03	WG2107839
Ethylbenzene	590	E	0.137	1.00	1	08/05/2023 04:03	WG2107839
Hexachloro-1,3-butadiene	U		0.337	1.00	1	08/05/2023 04:03	WG2107839
Isopropylbenzene	115		0.105	1.00	1	08/05/2023 04:03	WG2107839
p-Isopropyltoluene	6.63		0.120	1.00	1	08/05/2023 04:03	WG2107839
2-Butanone (MEK)	U		1.19	10.0	1	08/05/2023 04:03	WG2107839
Methylene Chloride	U		0.430	5.00	1	08/05/2023 04:03	WG2107839
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	08/05/2023 04:03	WG2107839
Methyl tert-butyl ether	6.81		0.101	1.00	1	08/05/2023 04:03	WG2107839
Naphthalene	294	C3 E	1.00	5.00	1	08/05/2023 04:03	WG2107839
n-Propylbenzene	261	E	0.0993	1.00	1	08/05/2023 04:03	WG2107839

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

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Styrene	0.648	J	0.118	1.00	1	08/05/2023 04:03	WG2107839
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	08/05/2023 04:03	WG2107839
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	08/05/2023 04:03	WG2107839
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	08/05/2023 04:03	WG2107839
Tetrachloroethene	U		0.300	1.00	1	08/05/2023 04:03	WG2107839
Toluene	50.5		0.278	1.00	1	08/05/2023 04:03	WG2107839
1,2,3-Trichlorobenzene	U		0.230	1.00	1	08/05/2023 04:03	WG2107839
1,2,4-Trichlorobenzene	U		0.481	1.00	1	08/05/2023 04:03	WG2107839
1,1,1-Trichloroethane	U		0.149	1.00	1	08/05/2023 04:03	WG2107839
1,1,2-Trichloroethane	U		0.158	1.00	1	08/05/2023 04:03	WG2107839
Trichloroethene	U		0.190	1.00	1	08/05/2023 04:03	WG2107839
Trichlorofluoromethane	U		0.160	5.00	1	08/05/2023 04:03	WG2107839
1,2,3-Trichloropropane	U		0.237	2.50	1	08/05/2023 04:03	WG2107839
1,2,4-Trimethylbenzene	1150	Q	32.2	100	100	08/14/2023 19:51	WG2113824
1,2,3-Trimethylbenzene	374	E	0.104	1.00	1	08/05/2023 04:03	WG2107839
1,3,5-Trimethylbenzene	343	E	0.104	1.00	1	08/05/2023 04:03	WG2107839
Vinyl chloride	U		0.234	1.00	1	08/05/2023 04:03	WG2107839
Xylenes, Total	1430		0.174	3.00	1	08/05/2023 04:03	WG2107839
(S) Toluene-d8	*125*	J1		*80.0-120*		*08/05/2023 04:03*	WG2107839
(S) Toluene-d8	*118*			*80.0-120*		*08/14/2023 19:51*	WG2113824
(S) 4-Bromofluorobenzene	*127*	J1		*77.0-126*		*08/05/2023 04:03*	WG2107839
(S) 4-Bromofluorobenzene	*108*			*77.0-126*		*08/14/2023 19:51*	WG2113824
(S) 1,2-Dichloroethane-d4	*104*			*70.0-130*		*08/05/2023 04:03*	WG2107839
(S) 1,2-Dichloroethane-d4	*95.6*			*70.0-130*		*08/14/2023 19:51*	WG2113824

Sample Narrative:

L1641289-08 WG2113824: Benzene and 124TMB not reportable in hold due to detector saturation from high detections.

Method Blank (MB)

(MB) R3957992-2 08/08/23 03:00

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	*102*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3957992-1 08/08/23 02:03

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	6010	109	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*102*	*78.0-120*	

Method Blank (MB)

(MB) R3958274-2 08/08/23 14:41

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	*101*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3958274-1 08/08/23 13:57

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	4680	85.1	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*98.3*	*78.0-120*	

Method Blank (MB)

(MB) R3959657-3 08/09/23 14:32

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	*103*			*78.0-120*

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

(LCS) R3959657-1 08/09/23 11:17 • (LCSD) R3959657-2 08/09/23 11:39

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	5500	5210	5460	94.7	99.3	70.0-124			4.69	20
(S) a,a,a-Trifluorotoluene(FID)				*98.0*	*96.3*	*78.0-120*				

Method Blank (MB)

(MB) R3959658-3 08/09/23 14:32

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	*103*			*78.0-120*

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

(LCS) R3959658-1 08/09/23 11:17 • (LCSD) R3959658-2 08/09/23 11:39

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	5500	5210	5460	94.7	99.3	70.0-124			4.69	20
(S) a,a,a-Trifluorotoluene(FID)				*98.0*	*96.3*	*78.0-120*				

Method Blank (MB)

(MB) R3957580-3 08/04/23 21:01

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		11.3	50.0
Acrolein	U		2.54	50.0
Acrylonitrile	U		0.671	10.0
Benzene	0.101	J	0.0941	1.00
Bromobenzene	U		0.118	1.00
Bromodichloromethane	U		0.136	1.00
Bromoform	U		0.129	1.00
Bromomethane	U		0.605	5.00
n-Butylbenzene	U		0.157	1.00
sec-Butylbenzene	U		0.125	1.00
tert-Butylbenzene	U		0.127	1.00
Carbon tetrachloride	U		0.128	1.00
Chlorobenzene	U		0.116	1.00
Chlorodibromomethane	U		0.140	1.00
Chloroethane	U		0.192	5.00
Chloroform	U		0.111	5.00
Chloromethane	U		0.960	2.50
2-Chlorotoluene	U		0.106	1.00
4-Chlorotoluene	U		0.114	1.00
1,2-Dibromo-3-Chloropropane	U		0.276	5.00
1,2-Dibromoethane	U		0.126	1.00
Dibromomethane	U		0.122	1.00
1,2-Dichlorobenzene	U		0.107	1.00
1,3-Dichlorobenzene	U		0.110	1.00
1,4-Dichlorobenzene	U		0.120	1.00
Dichlorodifluoromethane	U		0.374	5.00
1,1-Dichloroethane	U		0.100	1.00
1,2-Dichloroethane	U		0.0819	1.00
1,1-Dichloroethene	U		0.188	1.00
cis-1,2-Dichloroethene	U		0.126	1.00
trans-1,2-Dichloroethene	U		0.149	1.00
1,2-Dichloropropane	U		0.149	1.00
1,1-Dichloropropene	U		0.142	1.00
1,3-Dichloropropane	U		0.110	1.00
cis-1,3-Dichloropropene	U		0.111	1.00
trans-1,3-Dichloropropene	U		0.118	1.00
2,2-Dichloropropane	U		0.161	1.00
Di-isopropyl ether	U		0.105	1.00
Ethylbenzene	U		0.137	1.00
Hexachloro-1,3-butadiene	U		0.337	1.00

Method Blank (MB)

(MB) R3957580-3 08/04/23 21:01

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Isopropylbenzene	U		0.105	1.00
p-Isopropyltoluene	U		0.120	1.00
2-Butanone (MEK)	U		1.19	10.0
Methylene Chloride	U		0.430	5.00
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.0993	1.00
Styrene	U		0.118	1.00
1,1,1,2-Tetrachloroethane	U		0.147	1.00
1,1,2,2-Tetrachloroethane	U		0.133	1.00
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00
Tetrachloroethene	U		0.300	1.00
Toluene	U		0.278	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.481	1.00
1,1,1-Trichloroethane	U		0.149	1.00
1,1,2-Trichloroethane	U		0.158	1.00
Trichloroethene	U		0.190	1.00
Trichlorofluoromethane	U		0.160	5.00
1,2,3-Trichloropropane	U		0.237	2.50
1,2,4-Trimethylbenzene	U		0.322	1.00
1,2,3-Trimethylbenzene	U		0.104	1.00
1,3,5-Trimethylbenzene	U		0.104	1.00
Vinyl chloride	U		0.234	1.00
Xylenes, Total	U		0.174	3.00
(S) Toluene-d8	*111*			*80.0-120*
(S) 4-Bromofluorobenzene	*104*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*113*			*70.0-130*

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

(LCS) R3957580-1 08/04/23 19:57 • (LCSD) R3957580-2 08/04/23 20:18

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	25.0	24.7	26.4	98.8	106	19.0-160			6.65	27
Acrolein	25.0	20.5	22.2	82.0	88.8	10.0-160			7.96	26
Acrylonitrile	25.0	21.5	23.9	86.0	95.6	55.0-149			10.6	20
Benzene	5.00	5.46	5.23	109	105	70.0-123			4.30	20

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

(LCS) R3957580-1 08/04/23 19:57 • (LCSD) R3957580-2 08/04/23 20:18

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromobenzene	5.00	4.80	4.94	96.0	98.8	73.0-121			2.87	20
Bromodichloromethane	5.00	5.42	5.36	108	107	75.0-120			1.11	20
Bromoform	5.00	4.14	4.53	82.8	90.6	68.0-132			9.00	20
Bromomethane	5.00	6.25	5.95	125	119	10.0-160			4.92	25
n-Butylbenzene	5.00	4.64	4.39	92.8	87.8	73.0-125			5.54	20
sec-Butylbenzene	5.00	5.03	5.03	101	101	75.0-125			0.000	20
tert-Butylbenzene	5.00	4.95	5.06	99.0	101	76.0-124			2.20	20
Carbon tetrachloride	5.00	5.79	5.55	116	111	68.0-126			4.23	20
Chlorobenzene	5.00	4.83	5.09	96.6	102	80.0-121			5.24	20
Chlorodibromomethane	5.00	4.50	4.83	90.0	96.6	77.0-125			7.07	20
Chloroethane	5.00	5.48	5.69	110	114	47.0-150			3.76	20
Chloroform	5.00	5.21	5.11	104	102	73.0-120			1.94	20
Chloromethane	5.00	5.26	5.28	105	106	41.0-142			0.380	20
2-Chlorotoluene	5.00	5.10	5.07	102	101	76.0-123			0.590	20
4-Chlorotoluene	5.00	4.89	4.80	97.8	96.0	75.0-122			1.86	20
1,2-Dibromo-3-Chloropropane	5.00	4.07	4.38	81.4	87.6	58.0-134			7.34	20
1,2-Dibromoethane	5.00	4.64	4.88	92.8	97.6	80.0-122			5.04	20
Dibromomethane	5.00	4.94	4.85	98.8	97.0	80.0-120			1.84	20
1,2-Dichlorobenzene	5.00	4.77	5.03	95.4	101	79.0-121			5.31	20
1,3-Dichlorobenzene	5.00	4.95	4.88	99.0	97.6	79.0-120			1.42	20
1,4-Dichlorobenzene	5.00	4.62	4.87	92.4	97.4	79.0-120			5.27	20
Dichlorodifluoromethane	5.00	6.04	6.28	121	126	51.0-149			3.90	20
1,1-Dichloroethane	5.00	5.06	5.14	101	103	70.0-126			1.57	20
1,2-Dichloroethane	5.00	5.06	5.22	101	104	70.0-128			3.11	20
1,1-Dichloroethene	5.00	5.52	5.23	110	105	71.0-124			5.40	20
cis-1,2-Dichloroethene	5.00	5.06	4.94	101	98.8	73.0-120			2.40	20
trans-1,2-Dichloroethene	5.00	5.36	5.27	107	105	73.0-120			1.69	20
1,2-Dichloropropane	5.00	5.14	4.97	103	99.4	77.0-125			3.36	20
1,1-Dichloropropene	5.00	5.40	5.10	108	102	74.0-126			5.71	20
1,3-Dichloropropane	5.00	4.56	4.71	91.2	94.2	80.0-120			3.24	20
cis-1,3-Dichloropropene	5.00	5.18	4.97	104	99.4	80.0-123			4.14	20
trans-1,3-Dichloropropene	5.00	4.53	4.50	90.6	90.0	78.0-124			0.664	20
2,2-Dichloropropane	5.00	4.97	4.82	99.4	96.4	58.0-130			3.06	20
Di-isopropyl ether	5.00	5.12	4.96	102	99.2	58.0-138			3.17	20
Ethylbenzene	5.00	4.68	4.95	93.6	99.0	79.0-123			5.61	20
Hexachloro-1,3-butadiene	5.00	4.98	4.90	99.6	98.0	54.0-138			1.62	20
Isopropylbenzene	5.00	4.89	5.09	97.8	102	76.0-127			4.01	20
p-Isopropyltoluene	5.00	4.95	5.10	99.0	102	76.0-125			2.99	20
2-Butanone (MEK)	25.0	23.2	24.3	92.8	97.2	44.0-160			4.63	20
Methylene Chloride	5.00	5.04	5.19	101	104	67.0-120			2.93	20

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

(LCS) R3957580-1 08/04/23 19:57 • (LCSD) R3957580-2 08/04/23 20:18

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	25.0	20.1	22.2	80.4	88.8	68.0-142			9.93	20
Methyl tert-butyl ether	5.00	4.80	4.95	96.0	99.0	68.0-125			3.08	20
Naphthalene	5.00	3.72	4.09	74.4	81.8	54.0-135			9.48	20
n-Propylbenzene	5.00	4.96	5.08	99.2	102	77.0-124			2.39	20
Styrene	5.00	4.29	4.64	85.8	92.8	73.0-130			7.84	20
1,1,1,2-Tetrachloroethane	5.00	4.71	4.73	94.2	94.6	75.0-125			0.424	20
1,1,2,2-Tetrachloroethane	5.00	4.14	4.29	82.8	85.8	65.0-130			3.56	20
1,1,2-Trichlorotrifluoroethane	5.00	6.30	6.28	126	126	69.0-132			0.318	20
Tetrachloroethene	5.00	5.01	5.49	100	110	72.0-132			9.14	20
Toluene	5.00	5.32	5.34	106	107	79.0-120			0.375	20
1,2,3-Trichlorobenzene	5.00	4.31	4.80	86.2	96.0	50.0-138			10.8	20
1,2,4-Trichlorobenzene	5.00	4.65	4.69	93.0	93.8	57.0-137			0.857	20
1,1,1-Trichloroethane	5.00	5.04	5.42	101	108	73.0-124			7.27	20
1,1,2-Trichloroethane	5.00	4.58	4.61	91.6	92.2	80.0-120			0.653	20
Trichloroethene	5.00	5.31	5.12	106	102	78.0-124			3.64	20
Trichlorofluoromethane	5.00	6.22	6.20	124	124	59.0-147			0.322	20
1,2,3-Trichloropropane	5.00	4.59	4.97	91.8	99.4	73.0-130			7.95	20
1,2,4-Trimethylbenzene	5.00	4.97	4.93	99.4	98.6	76.0-121			0.808	20
1,2,3-Trimethylbenzene	5.00	4.97	5.06	99.4	101	77.0-120			1.79	20
1,3,5-Trimethylbenzene	5.00	5.24	5.14	105	103	76.0-122			1.93	20
Vinyl chloride	5.00	5.59	5.49	112	110	67.0-131			1.81	20
Xylenes, Total	15.0	14.8	15.0	98.7	100	79.0-123			1.34	20
(S) Toluene-d8				*104*	*107*	*80.0-120*				
(S) 4-Bromofluorobenzene				*101*	*102*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*112*	*112*	*70.0-130*				

Method Blank (MB)

(MB) R3960845-3 08/14/23 11:28

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.0941	1.00
1,2,4-Trimethylbenzene	U		0.322	1.00
(S) Toluene-d8	*118*			*80.0-120*
(S) 4-Bromofluorobenzene	*107*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*95.6*			*70.0-130*

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

(LCS) R3960845-1 08/14/23 10:19 • (LCSD) R3960845-2 08/14/23 10:42

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	5.00	5.47	5.34	109	107	70.0-123			2.41	20
1,2,4-Trimethylbenzene	5.00	5.17	5.11	103	102	76.0-121			1.17	20
(S) Toluene-d8				*116*	*116*	*80.0-120*				
(S) 4-Bromofluorobenzene				*108*	*109*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*93.8*	*93.3*	*70.0-130*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
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.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
NV5 - Wilsonville, OR
9450 SW Commerce Circle
Ste. 300
Wilsonville, OR 97070

Report to:
Andre DeJonge

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

Email To:
Andre.DeJonge@nv5.com;Erik.Hedberg@nv5.co

Project Description: Astoria Warehouse
City/State Collected: Astoria, OR
Please Circle: (PT) MT CT ET

Phone: 503-968-8787
Client Project # BigBeams-1-04task 10
Lab Project # GEODESPOR-BIGB104

Collected by (print): Andre DeJong
Collected by (signature):
Immediately Packed on Ice N ___ Y ✓
Site/Facility ID #
P.O. #

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day
Date Results Needed
Quote #

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1641289
F192

Acctnum: GEODESPOR
Template: T234126
Prelogin: P1012227
PM: 110 - Brian Ford
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	NWTPHGX 40mlAmb HCl	VOCs 8260 40mlAmb-HCl	Remarks	Sample # (lab only)
MW-3	-	GW	-	072523	1350	6	X	X		-01
MW-5	-	GW	-	"	1540	6	X	X		-02
MW-2	-	GW	-	"	1710	6	X	X		-03
MW-6	-	GW	-	072623	1135	6	X	X		-04
MW-7	-	GW	-	"	1250	6	X	X		-05
MW-1	-	GW	-	"	1520	6	X	X		-06
MW-4	-	GW	-	"	1700	6	X	X		-07
MW-8	-	GW	-	072723	1120	6	X	X		-08
		GW								

* 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 # 6040 5557

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	If preservation required by Login: Date/Time
	073123	am.		1	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 6.5 °C Bottles Received: 48	
				5.4+0=5.4	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 8-1-23 Time: 900	Hold: Condition: NCF / OK
			Eli Dorsett 17		

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8/25/2023
Mr. Erik Hedberg
NV5, Inc. Company
9450 SW Commerce Circle
Suite 300
Wilsonville OR 97070

Project Name: Former Astoria Warehousing
Project #: BigBeams-1-04
Workorder #: 2308261

Dear Mr. Erik Hedberg

The following report includes the data for the above referenced project for sample(s) received on 8/14/2023 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: Monica Tran at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Monica Tran

Project Manager

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WORK ORDER #: 2308261

Work Order Summary

CLIENT:	Mr. Erik Hedberg NV5, Inc. Company 9450 SW Commerce Circle Suite 300 Wilsonville, OR 97070	**BILL TO:**	Mr. Erik Hedberg NV5, Inc. Company 9450 SW Commerce Circle Suite 300 Wilsonville, OR 97070
PHONE:	503-968-8787	**P.O. #**	BigBeams-1-04
FAX:		**PROJECT #**	BigBeams-1-04 Former Astoria Warehousing
DATE RECEIVED:	08/14/2023	**CONTACT:**	Monica Tran
DATE COMPLETED:	08/25/2023		

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	CCV	Passive S.E. RAD130/SKC
11A	LCS	Passive S.E. RAD130/SKC
11AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY: Heidi Hayes DATE: 08/25/23

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP – 209222, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP – T104704434-22-18, UT NELAP – CA009332022-14, VA NELAP - 12240, WA ELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) CA300005-017
Eurofins Environment Testing Northern California, LLC certifies that the test results contained in this report meet all requirements of the 2016 TNI Standard.

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
NV5, Inc. Company
Workorder# 2308261

Eight Radiello 130 (Solvent) samples were received on August 14, 2023. 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

There were no receiving discrepancies.

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 19825 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.

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#: 2308261-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	110	56
Hexane	0.10	0.076	0.46	0.35
Ethyl Acetate	0.40	0.26	37	24
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	9.5	6.0
Chloroform	0.10	0.067	0.66	0.45
Cyclohexane	0.10	0.093	0.12	0.12
Carbon Tetrachloride	0.10	0.075	0.38	0.28
Benzene	0.40	0.25	0.46	0.29
Heptane	0.10	0.087	0.13	0.12
Toluene	0.10	0.068	0.79	0.54
Ethyl Benzene	0.10	0.074	0.34	0.25
m,p-Xylene	0.10	0.072	1.2	0.86
o-Xylene	0.10	0.078	0.49	0.38
Styrene	0.10	0.083	0.11	0.090

Client Sample ID: Indoor-2

Lab ID#: 2308261-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	140	71
Hexane	0.10	0.076	0.45	0.35
Ethyl Acetate	0.40	0.26	37	24
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	9.7	6.2
Chloroform	0.10	0.067	0.69	0.46
Cyclohexane	0.10	0.093	0.14	0.13
Carbon Tetrachloride	0.10	0.075	0.39	0.30
Benzene	0.40	0.25	0.48	0.30
Heptane	0.10	0.087	0.13	0.11
Toluene	0.10	0.068	0.76	0.52
Ethyl Benzene	0.10	0.074	0.31	0.23
m,p-Xylene	0.10	0.072	1.1	0.81
o-Xylene	0.10	0.078	0.44	0.34

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

Client Sample ID: Indoor-3

Lab ID#: 2308261-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	86	42
Hexane	0.10	0.076	0.71	0.54
Ethyl Acetate	0.40	0.26	58	37
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	8.2	5.3
Chloroform	0.10	0.067	0.62	0.41
Cyclohexane	0.10	0.093	0.18	0.16
Carbon Tetrachloride	0.10	0.075	0.27	0.20
Benzene	0.40	0.25	0.47	0.29
Heptane	0.10	0.087	0.12	0.11
Toluene	0.10	0.068	0.72	0.49
Ethyl Benzene	0.10	0.074	0.29	0.21
m,p-Xylene	0.10	0.072	1.0	0.74
o-Xylene	0.10	0.078	0.41	0.32

Client Sample ID: Indoor-4

Lab ID#: 2308261-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	150	73
Hexane	0.10	0.076	0.84	0.64
Ethyl Acetate	0.40	0.26	28	18
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	17	11
Chloroform	0.10	0.067	0.51	0.34
Cyclohexane	0.10	0.093	0.16	0.15
Carbon Tetrachloride	0.10	0.075	0.32	0.24
Benzene	0.40	0.25	0.55	0.35
Heptane	0.10	0.087	0.24	0.21
Toluene	0.10	0.068	1.4	0.96
Ethyl Benzene	0.10	0.074	0.95	0.70
m,p-Xylene	0.10	0.072	4.0	2.9
o-Xylene	0.10	0.078	2.0	1.6
Styrene	0.10	0.083	0.15	0.13

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

Client Sample ID: Indoor-5

Lab ID#: 2308261-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	120	57
Hexane	0.10	0.076	0.83	0.63
Ethyl Acetate	0.40	0.26	89	58
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	7.6	4.9
Chloroform	0.10	0.067	0.67	0.45
Cyclohexane	0.10	0.093	0.27	0.26
Carbon Tetrachloride	0.10	0.075	0.26	0.20
Benzene	0.40	0.25	0.49	0.31
Heptane	0.10	0.087	0.20	0.17
Toluene	0.10	0.068	0.54	0.37
Ethyl Benzene	0.10	0.074	0.18	0.14
m,p-Xylene	0.10	0.072	0.64	0.46
o-Xylene	0.10	0.078	0.26	0.20
Styrene	0.10	0.083	0.16	0.13

Client Sample ID: Indoor-6

Lab ID#: 2308261-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	160	77
Hexane	0.10	0.076	0.77	0.59
Ethyl Acetate	0.40	0.26	93	60
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	11	7.1
Chloroform	0.10	0.067	0.76	0.51
Cyclohexane	0.10	0.093	0.18	0.17
Carbon Tetrachloride	0.10	0.075	0.24	0.18
Benzene	0.40	0.25	0.48	0.30
Heptane	0.10	0.087	0.13	0.11
Toluene	0.10	0.068	0.69	0.47
Ethyl Benzene	0.10	0.074	0.21	0.15
m,p-Xylene	0.10	0.072	0.77	0.56
o-Xylene	0.10	0.078	0.31	0.24
Styrene	0.10	0.083	0.14	0.11

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

Client Sample ID: Indoor-7

Lab ID#: 2308261-07A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	97	48
Hexane	0.10	0.076	0.70	0.54
Ethyl Acetate	0.40	0.26	64	41
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	7.2	4.6
Chloroform	0.10	0.067	0.63	0.42
Cyclohexane	0.10	0.093	0.16	0.15
Carbon Tetrachloride	0.10	0.075	0.28	0.21
Benzene	0.40	0.25	0.47	0.29
Heptane	0.10	0.087	0.12	0.11
Toluene	0.10	0.068	0.67	0.46
Ethyl Benzene	0.10	0.074	0.23	0.17
m,p-Xylene	0.10	0.072	0.83	0.60
o-Xylene	0.10	0.078	0.32	0.25

Client Sample ID: Background

Lab ID#: 2308261-08A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	14	7.1
Hexane	0.10	0.076	0.27	0.21
Ethyl Acetate	0.40	0.26	11	7.4
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	2.2	1.4
Chloroform	0.10	0.067	0.13	0.087
Carbon Tetrachloride	0.10	0.075	0.29	0.22
Benzene	0.40	0.25	0.54	0.34
Heptane	0.10	0.087	0.13	0.11
Toluene	0.10	0.068	0.48	0.32
Ethyl Benzene	0.10	0.074	0.10	0.078
m,p-Xylene	0.10	0.072	0.43	0.31
o-Xylene	0.10	0.078	0.14	0.11

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Client Sample ID: Indoor-1

Lab ID#: 2308261-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c081508sim**	**Date of Collection: 8/10/23 9:20:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/15/23 09:44 AM**	
		Date of Extraction: 8/15/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	110	56
Methyl tert-butyl ether	0.10	0.078	Not Detected	Not Detected
Hexane	0.10	0.076	0.46	0.35
Ethyl Acetate	0.40	0.26	37	24
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	9.5	6.0
Chloroform	0.10	0.067	0.66	0.45
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.12	0.12
Carbon Tetrachloride	0.10	0.075	0.38	0.28
Benzene	0.40	0.25	0.46	0.29
1,2-Dichloroethane	0.10	0.066	Not Detected	Not Detected
Heptane	0.10	0.087	0.13	0.12
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	0.79	0.54
Tetrachloroethene	0.10	0.086	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.34	0.25
m,p-Xylene	0.10	0.072	1.2	0.86
o-Xylene	0.10	0.078	0.49	0.38
Styrene	0.10	0.083	0.11	0.090
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.099	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 77.0F , duration time = 19820 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	91	70-130

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Client Sample ID: Indoor-2

Lab ID#: 2308261-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c081509sim**	**Date of Collection: 8/10/23 9:25:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/15/23 10:12 AM**	
		Date of Extraction: 8/15/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	140	71
Methyl tert-butyl ether	0.10	0.078	Not Detected	Not Detected
Hexane	0.10	0.076	0.45	0.35
Ethyl Acetate	0.40	0.26	37	24
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	9.7	6.2
Chloroform	0.10	0.067	0.69	0.46
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.14	0.13
Carbon Tetrachloride	0.10	0.075	0.39	0.30
Benzene	0.40	0.25	0.48	0.30
1,2-Dichloroethane	0.10	0.066	Not Detected	Not Detected
Heptane	0.10	0.087	0.13	0.11
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	0.76	0.52
Tetrachloroethene	0.10	0.086	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.31	0.23
m,p-Xylene	0.10	0.072	1.1	0.81
o-Xylene	0.10	0.078	0.44	0.34
Styrene	0.10	0.083	Not Detected	Not Detected
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.099	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 77.0F , duration time = 19820 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: Indoor-3

Lab ID#: 2308261-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c081510sim**	**Date of Collection: 8/10/23 9:30:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/15/23 10:39 AM**	
		Date of Extraction: 8/15/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	86	42
Methyl tert-butyl ether	0.10	0.078	Not Detected	Not Detected
Hexane	0.10	0.076	0.71	0.54
Ethyl Acetate	0.40	0.26	58	37
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	8.2	5.3
Chloroform	0.10	0.067	0.62	0.41
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.18	0.16
Carbon Tetrachloride	0.10	0.075	0.27	0.20
Benzene	0.40	0.25	0.47	0.29
1,2-Dichloroethane	0.10	0.066	Not Detected	Not Detected
Heptane	0.10	0.087	0.12	0.11
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	0.72	0.49
Tetrachloroethene	0.10	0.086	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.29	0.21
m,p-Xylene	0.10	0.072	1.0	0.74
o-Xylene	0.10	0.078	0.41	0.32
Styrene	0.10	0.083	Not Detected	Not Detected
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.099	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 77.0F , duration time = 19820 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	91	70-130

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Client Sample ID: Indoor-4

Lab ID#: 2308261-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c081511sim**	**Date of Collection: 8/10/23 9:35:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/15/23 11:06 AM**	
		Date of Extraction: 8/15/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	150	73
Methyl tert-butyl ether	0.10	0.078	Not Detected	Not Detected
Hexane	0.10	0.076	0.84	0.64
Ethyl Acetate	0.40	0.26	28	18
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	17	11
Chloroform	0.10	0.067	0.51	0.34
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.16	0.15
Carbon Tetrachloride	0.10	0.075	0.32	0.24
Benzene	0.40	0.25	0.55	0.35
1,2-Dichloroethane	0.10	0.066	Not Detected	Not Detected
Heptane	0.10	0.087	0.24	0.21
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	1.4	0.96
Tetrachloroethene	0.10	0.086	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.95	0.70
m,p-Xylene	0.10	0.072	4.0	2.9
o-Xylene	0.10	0.078	2.0	1.6
Styrene	0.10	0.083	0.15	0.13
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.099	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 77.0F , duration time = 19820 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	91	70-130

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Client Sample ID: Indoor-5

Lab ID#: 2308261-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c081512sim**	**Date of Collection: 8/10/23 9:45:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/15/23 11:33 AM**	
		Date of Extraction: 8/15/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	120	57
Methyl tert-butyl ether	0.10	0.078	Not Detected	Not Detected
Hexane	0.10	0.076	0.83	0.63
Ethyl Acetate	0.40	0.26	89	58
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	7.6	4.9
Chloroform	0.10	0.067	0.67	0.45
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.27	0.26
Carbon Tetrachloride	0.10	0.075	0.26	0.20
Benzene	0.40	0.25	0.49	0.31
1,2-Dichloroethane	0.10	0.066	Not Detected	Not Detected
Heptane	0.10	0.087	0.20	0.17
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	0.54	0.37
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.18	0.14
m,p-Xylene	0.10	0.072	0.64	0.46
o-Xylene	0.10	0.078	0.26	0.20
Styrene	0.10	0.083	0.16	0.13
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.099	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 77.0F , duration time = 19825 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: Indoor-6

Lab ID#: 2308261-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c081513sim**	**Date of Collection: 8/10/23 9:50:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/15/23 12:01 PM**	
		Date of Extraction: 8/15/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	160	77
Methyl tert-butyl ether	0.10	0.078	Not Detected	Not Detected
Hexane	0.10	0.076	0.77	0.59
Ethyl Acetate	0.40	0.26	93	60
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	11	7.1
Chloroform	0.10	0.067	0.76	0.51
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.18	0.17
Carbon Tetrachloride	0.10	0.075	0.24	0.18
Benzene	0.40	0.25	0.48	0.30
1,2-Dichloroethane	0.10	0.066	Not Detected	Not Detected
Heptane	0.10	0.087	0.13	0.11
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	0.69	0.47
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.21	0.15
m,p-Xylene	0.10	0.072	0.77	0.56
o-Xylene	0.10	0.078	0.31	0.24
Styrene	0.10	0.083	0.14	0.11
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.099	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 77.0F , duration time = 19825 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	91	70-130

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Client Sample ID: Indoor-7

Lab ID#: 2308261-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c081514sim**	**Date of Collection: 8/10/23 9:55:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/15/23 12:28 PM**	
		Date of Extraction: 8/15/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	97	48
Methyl tert-butyl ether	0.10	0.078	Not Detected	Not Detected
Hexane	0.10	0.076	0.70	0.54
Ethyl Acetate	0.40	0.26	64	41
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	7.2	4.6
Chloroform	0.10	0.067	0.63	0.42
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	0.16	0.15
Carbon Tetrachloride	0.10	0.075	0.28	0.21
Benzene	0.40	0.25	0.47	0.29
1,2-Dichloroethane	0.10	0.066	Not Detected	Not Detected
Heptane	0.10	0.087	0.12	0.11
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	0.67	0.46
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.23	0.17
m,p-Xylene	0.10	0.072	0.83	0.60
o-Xylene	0.10	0.078	0.32	0.25
Styrene	0.10	0.083	Not Detected	Not Detected
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.099	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 77.0F , duration time = 19825 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: Background

Lab ID#: 2308261-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c081515sim**	**Date of Collection: 8/10/23 10:00:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/15/23 12:55 PM**	
		Date of Extraction: 8/15/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	14	7.1
Methyl tert-butyl ether	0.10	0.078	Not Detected	Not Detected
Hexane	0.10	0.076	0.27	0.21
Ethyl Acetate	0.40	0.26	11	7.4
2-Butanone (Methyl Ethyl Ketone)	0.20	0.13	2.2	1.4
Chloroform	0.10	0.067	0.13	0.087
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.075	0.29	0.22
Benzene	0.40	0.25	0.54	0.34
1,2-Dichloroethane	0.10	0.066	Not Detected	Not Detected
Heptane	0.10	0.087	0.13	0.11
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	0.48	0.32
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	0.10	0.078
m,p-Xylene	0.10	0.072	0.43	0.31
o-Xylene	0.10	0.078	0.14	0.11
Styrene	0.10	0.083	Not Detected	Not Detected
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.099	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 77.0F , duration time = 19825 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2308261-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c081507sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/15/23 09:15 AM**	
		Date of Extraction: 8/15/23	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	0.49	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	0.078	Not Detected	Not Detected
Hexane	0.10	0.076	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	0.067	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	0.081	Not Detected	Not Detected
Cyclohexane	0.10	0.093	Not Detected	Not Detected
Carbon Tetrachloride	0.10	0.075	Not Detected	Not Detected
Benzene	0.40	0.25	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.066	Not Detected	Not Detected
Heptane	0.10	0.087	Not Detected	Not Detected
Trichloroethene	0.10	0.073	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	0.15	Not Detected	Not Detected
Toluene	0.10	0.068	Not Detected	Not Detected
Tetrachloroethene	0.10	0.085	Not Detected	Not Detected
Chlorobenzene	0.10	0.074	Not Detected	Not Detected
Ethyl Benzene	0.10	0.074	Not Detected	Not Detected
m,p-Xylene	0.10	0.072	Not Detected	Not Detected
o-Xylene	0.10	0.078	Not Detected	Not Detected
Styrene	0.10	0.083	Not Detected	Not Detected
Propylbenzene	0.10	0.088	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	0.099	Not Detected	Not Detected
Naphthalene	0.10	0.20	Not Detected	Not Detected

Temperature = 77.0F , duration time = 19825 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130

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Client Sample ID: CCV

Lab ID#: 2308261-10A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c081502sim**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/15/23 06:59 AM**
		Date of Extraction: NA

Compound	%Recovery
Ethanol	122
Methyl tert-butyl ether	115
Hexane	107
Ethyl Acetate	113
2-Butanone (Methyl Ethyl Ketone)	114
Chloroform	109
1,1,1-Trichloroethane	100
Cyclohexane	100
Carbon Tetrachloride	100
Benzene	95
1,2-Dichloroethane	102
Heptane	96
Trichloroethene	100
4-Methyl-2-pentanone	100
Toluene	93
Tetrachloroethene	95
Chlorobenzene	98
Ethyl Benzene	96
m,p-Xylene	96
o-Xylene	97
Styrene	99
Propylbenzene	100
1,4-Dichlorobenzene	102
Naphthalene	108

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

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Client Sample ID: LCS

Lab ID#: 2308261-11A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c081504sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/15/23 07:54 AM**	
		Date of Extraction: 8/15/23	

Compound	%Recovery	Method Limits
Ethanol	64	50-130
Methyl tert-butyl ether	93	70-130
Hexane	93	70-130
Ethyl Acetate	92	70-130
2-Butanone (Methyl Ethyl Ketone)	90	70-130
Chloroform	91	70-130
1,1,1-Trichloroethane	87	70-130
Cyclohexane	90	70-130
Carbon Tetrachloride	88	70-130
Benzene	83	70-130
1,2-Dichloroethane	86	70-130
Heptane	90	70-130
Trichloroethene	91	70-130
4-Methyl-2-pentanone	89	70-130
Toluene	88	70-130
Tetrachloroethene	90	70-130
Chlorobenzene	89	70-130
Ethyl Benzene	93	70-130
m,p-Xylene	92	70-130
o-Xylene	92	70-130
Styrene	64	20-100
Propylbenzene	95	70-130
1,4-Dichlorobenzene	89	50-110
Naphthalene	34	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	89	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2308261-11AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	**c081505sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/15/23 08:21 AM**	
		Date of Extraction: 8/15/23	

Compound	%Recovery	Method Limits
Ethanol	69	50-130
Methyl tert-butyl ether	104	70-130
Hexane	101	70-130
Ethyl Acetate	101	70-130
2-Butanone (Methyl Ethyl Ketone)	99	70-130
Chloroform	101	70-130
1,1,1-Trichloroethane	94	70-130
Cyclohexane	95	70-130
Carbon Tetrachloride	94	70-130
Benzene	88	70-130
1,2-Dichloroethane	94	70-130
Heptane	93	70-130
Trichloroethene	94	70-130
4-Methyl-2-pentanone	91	70-130
Toluene	88	70-130
Tetrachloroethene	88	70-130
Chlorobenzene	87	70-130
Ethyl Benzene	90	70-130
m,p-Xylene	89	70-130
o-Xylene	89	70-130
Styrene	61	20-100
Propylbenzene	91	70-130
1,4-Dichlorobenzene	86	50-110
Naphthalene	33	5-80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	89	70-130

ATTACHMENT C

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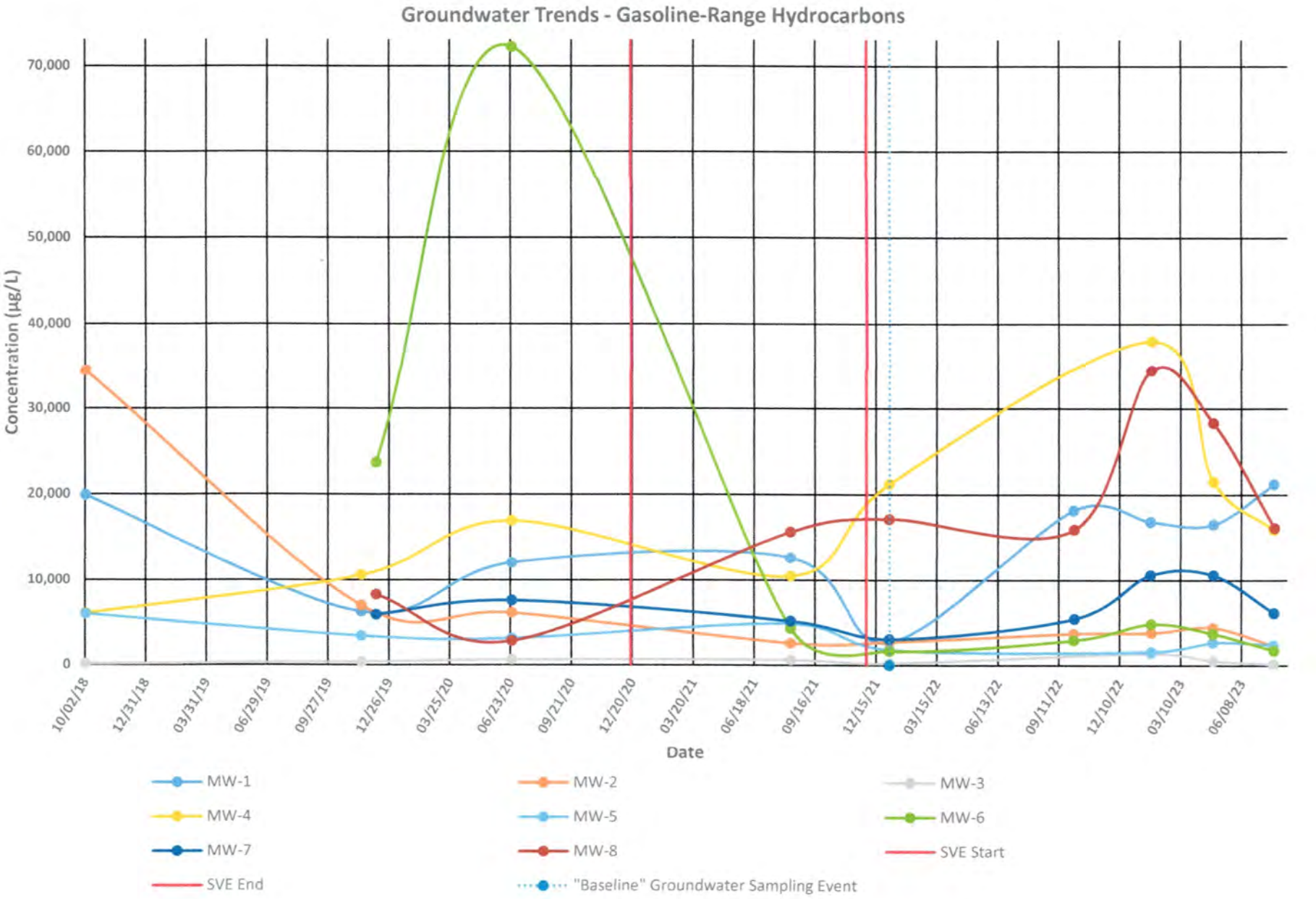
GROUNDWATER CONCENTRATION TRENDS


Groundwater Trends - Gasoline-Range Hydrocarbons
Concentration (µg/L)
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
10/02/18
12/31/18
03/31/19
06/29/19
09/27/19
12/26/19
03/25/20
06/23/20
09/21/20
12/20/20
03/20/21
06/18/21
09/16/21
12/15/21
03/15/22
06/13/22
09/11/22
12/10/22
03/10/23
06/08/23
Date
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
SVE Start
SVE End
"Baseline" Groundwater Sampling Event

ACRONYMS AND ABBREVIATIONS

ACRONYMS AND ABBREVIATIONS

BGS	below ground surface
BS	blank spike
BSD	blank spike duplicate
BTOC	below top of casing
CMMP	Contaminated Media Management Plan
COC	chemical of concern or contaminant of concern
DEQ	Oregon Department of Environmental Quality
ECSI	Environmental Cleanup Site Information
EPA	U.S. Environmental Protection Agency
eV	electronvolt
°F	degrees Fahrenheit
HDPE	high-density polyethylene
I.D.	identification
inHg	inches of mercury
LUST	Leaking Underground Storage Tank
mg/L	milligrams per liter
mL/min	milliliters per minute
MS	matrix spike
MSD	matrix spike duplicate
MSL	mean sea level
MTBE	methyl tertiary-butyl ether
mV	millivolts
NAVD	North American Vertical Datum
ND	not detected
NE	not established
ng/sample	nanograms per sample
NM	not measured
NOAA	National Oceanic and Atmospheric Administration
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
PFA	perfluoroalkoxy
PID	photoionization detector
PPA	Prospective Purchaser Agreement
ppm	parts per million
QC	quality control
RBC	risk-based concentration
RBDM	*Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites*
ROI	radius of influence
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
VOC	volatile organic compound