August 2023 Data Summary Report
Tigard Cleaners
Tigard, Oregon
ECSI No. 6158

Prepared for:
Oregon Department of Environmental Quality
Task Order No. 71-18-2

March 18, 2024
2326-01/Task 9

APEX

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1.0 Introduction

This Data Summary Report (Report) presents the results of the August 2023 media monitoring activities conducted at the Tigard Cleaners Site (the Site) located at 12519 SW Main Street in Tigard, Oregon (Figures 1 and 2). Tigard Cleaners is located between Kepler's Upholstery shop (Kepler's) at 12511 Main Street (hydraulically upgradient, to the east) and the Weichert Realtors space (formerly Clear Payments and Future State Consultants) at 12525 Main Street (downgradient to the west). The Site is also adjacent to a brownfield development to the west at 12533-12537 SW Main Street (referred to as the Saxony-Pacific Property).

This Report was prepared on behalf of the Oregon Department of Environmental Quality (DEQ) by Apex Companies, LLC (Apex) as part of the Groundwater Interim Remedial Measure (IRM) post-implementation monitoring program. This Report was prepared for the DEQ under Task 4 of Task Order No 71-18-2.

1.1 Background and Previous Work

The Site is listed in DEQ's Environmental Cleanup Site Information (ECSI) database as ECSI ID 6158 and had been an active participant in the DEQ's Dry Cleaner Program. The active business operates in the main building that fronts SW Main Street and a small, detached building on the northwest side of the property, herein referred to as the main building and back building, respectively. Dry-cleaning operations that used tetrachloroethene (PCE) were reportedly conducted in the main building from the 1950s through the late 1970s when the operations moved to the back building.

Previous investigations conducted at the Site have identified concentrations of dry-cleaning chemicals, including PCE and trichloroethene (TCE), in groundwater, ambient air, and soil vapor below the facility at concentrations above occupational risk-based concentration (RBC) screening levels (Apex, 2017; AMEC Foster Wheeler [AMEC], 2017; Associated Environmental Group (AEG), 2016; DEQ, 2016). A Phase II site assessment (AMEC, 2017) concluded that dense non-aqueous phase liquids (DNAPLs) were likely present beneath both Site buildings, but the lateral extent of the chloroethene plumes exceeding RBCs was limited to an area less than 20 feet south and west of the Site.

2017 Interim Remedial Measures. In August 2017, Apex, on behalf of the DEQ, completed a vapor control IRM which included: the installation of a vapor control system (VCS); installation of two additional groundwater monitoring wells; completion of two deep borings (completed to depths of 50 feet below ground surface [bgs]) with depth-discrete groundwater sampling; and installation of four additional sub-slab vapor monitoring points in the Site buildings (Apex, 2017). Results from the August 2017 IRM implementation and associated sampling were reported in the 2017 *Interim Removal Measures Report* (IRM Report; Apex, 2017). Consistent with previous sampling events, PCE and associated degradation by-products (TCE, cis-1,2-dichloroethene [DCE], and vinyl chloride [VC]) were identified at the Site in groundwater at concentrations that exceeded the applicable DEQ RBCs. Lithologic observations from the depth-discrete groundwater samples identified two

fine-grained sand zones with greater permeability, referred to as the upper and lower conductive zones. The upper conductive zone was observed between approximately 18 feet and 25 feet bgs, and the lower conductive zone was observed between approximately 35 feet and 45 feet bgs. Lab results from depth-discrete groundwater samples revealed concentrations of chloroethenes above DEQ RBCs at depths ranging from 13 feet to 50 feet bgs (with relatively higher concentrations coincident with each of the two conductive zones), which suggests that the plume has infiltrated to the deeper transmissive layers beneath the Site. The dissolved-phase contaminant plume was also observed to extend laterally downgradient toward the Saxony-Pacific Property. The report concluded that enhanced bioremediation would be a viable interim action technology to enhance the process of naturally occurring reductive dechlorination at the Site, facilitating a decrease in the concentrations of volatile organics in the groundwater and saturated soil.

In December 2017, Apex completed a round of focused ambient air and sub-slab vapor sampling from Tigard Cleaner's main building and Kepler's. The purpose of this sampling event was to further assess the potential source of the relatively higher TCE concentrations that had been encountered in Kepler's. TCE and PCE concentrations were consistent with previous observations; TCE concentrations in ambient air and in soil vapor collected from Kepler's remained an order of magnitude greater than those from the Site buildings. An inventory of chemicals used at Kepler's was completed on November 10, 2017, and did not identify products in their current inventory that contained TCE, but it is unknown whether historical practices may have used TCE-containing products.

2018 Bioremediation Injections. In May 2018, Apex, on behalf of the DEQ, completed a groundwater IRM which included: injection of an *in situ* bioremediation substrate and active cultures; installation of two intermediate-zone monitoring wells; installation of two additional sub-slab vapor pins in Kepler's tenant space; tracing of Kepler's sanitary line to the municipal connection; and completion of one round of media monitoring approximately one month following IRM implementation. Groundwater IRM activities and results from the media monitoring event (June 2018) were presented in the *Groundwater Interim Removal Measures Completion Report*, submitted to DEQ on August 21, 2018 (Apex, 2018b). The report concluded that the results from the June 2018 media monitoring event were consistent with past sampling events; PCE and associated degradation byproducts were present at the Site in groundwater, sub-slab vapors, and ambient air at concentrations that exceeded the applicable DEQ RBCs. Early evidence of reductive dechlorination as a result of the enhanced bioremediation activity was observed in wells MW-3 and MW-6, evidenced by a reduced concentration of PCE and TCE and elevated concentrations of DCE and VC (which are interim degradation byproducts of the reductive dechlorination of PCE and TCE).

During the 2018 *in situ* bioremediation substrate injections, Apex field personnel noticed a small quantity of substrate had migrated to Fanno Creek, located approximately 300 feet southwest of the Site. The substrate was found to be entering the creek through a previously unidentified legacy stormwater pipe. Injections were paused to allow adjustment of the injection plan and prevent further impact to the stormwater pipe. After relocating injection points, injections proceeded with no further disruption to Fanno Creek. Apex staff sampled

water from the outfall pipe on two occasions to evaluate the potential for groundwater impacted by chlorinated solvents to enter Fanno Creek via the legacy stormwater pipe during different groundwater level conditions. Samples were collected on August 1, 2018, and November 5, 2020 which represented dry and wet season conditions. Results from the samples contained low levels of chlorinated volatile organic compounds (VOCs). However, the potential influence of historically higher groundwater level conditions on the outfall is unknown.

Additional post-injection media monitoring events were conducted at the Site in September 2018 and February 2019 and involved collecting groundwater, ambient air, sub-slab vapor, and VCS effluent samples. The reports concluded that concentrations of PCE and associated degradation byproducts were present at the Site in groundwater, sub-slab vapors, and ambient air at concentrations that continue to exceed applicable DEQ RBCs. However, evidence of increased reductive dechlorination as a result of the groundwater IRM was observed in most monitoring wells, but at different stages of the reductive dechlorination process.

TCE concentrations in ambient air and sub-slab vapors beneath Kepler's continued to exceed applicable DEQ RBCs and were at least one order of magnitude higher than TCE concentrations in historical air and vapor samples collected from beneath Tigard Cleaners. Additionally, the ratio between PCE and TCE in samples collected from Kepler's was inconsistent with samples collected from Tigard Cleaners. Further investigations were conducted during the February 2019 event and included collecting a grab groundwater sample and grab soil sample upgradient of well MW-4, near the wall between Tigard Cleaner's main building and Kepler's. The grab groundwater sample did not contain detectable concentrations of PCE or TCE. Low levels of PCE and TCE were detected in the grab soil sample at concentrations below the applicable RBCs. The ratio between PCE and TCE in the soil sample was similar to the ratio observed in groundwater collected from well MW-4 (and ratios observed in sub-slab samples collected beneath the slab of Tigard Cleaner's main building). Based on the results of the additional investigation and historical data, the report concluded that it is likely that the TCE concentrations detected in the Kepler's building are unrelated to activities at Tigard Cleaners and are associated with a separate (but undefined) source.

Semi-Annual Monitoring. Additional media monitoring events have been conducted on a semi-annual basis from May 2019 to present. Monitoring events involved collecting groundwater, ambient air, sub-slab vapor, and VCS effluent samples. Findings were generally consistent with previous media monitoring events at the Site, and evidence of increased reductive dechlorination as a result of the groundwater IRMs was observed in most monitoring wells, but at different stages of the reductive dechlorination process.

2022 Bioremediation Injections. A focused bioremediation injection was completed in August 2022. A total of 8,105 gallons of EOS Pro (emulsified oil), BAC-9 (microorganisms), and Clean-ER (zero-valent iron; ZVI) solution were injected into the subsurface during the expanded groundwater IRM activities, with the ZVI injected in areas of relatively higher concentrations. During the monitoring event conducted directly after the injections (October 2022), PCE and associated degradation byproducts were present in Site groundwater and ambient air at concentrations that exceed applicable DEQ RBCs.

1.2 Scope of Work

The scope of work for the August 2023 monitoring event was completed in general accordance with the *Groundwater IRM Work Plan* (Work Plan; Apex, 2018a) with amendments described in the Budget and Assumptions Proposal dated February 24, 2022.

The purpose of the August 2023 semi-annual media monitoring event at the Site was to evaluate the performance of the IRMs on the quality of groundwater and ambient air. In general, the work consisted of the following tasks:

- Complete one groundwater monitoring event to observe and document the effectiveness of the bioremediation application;
- Complete one ambient air monitoring event to assess outdoor air quality and air quality inside the Weichert Realtors (former Clear Payments and Future State) office and Kepler's store;
- Prepare this Report.

The activities from the August 2023 media monitoring event are discussed in Section 2.0 below.

1.3 Deviations from Scope of Work

The VCS exhaust monitoring sample was not collected during the August 2023 monitoring event due to failure of the laboratory provided equipment. The VCS exhaust monitoring sample is used to confirm that vapor concentrations from the stack continue to be acceptable for release to ambient air. However, the concentrations of VOCs in the exhaust sample have consistently been well below levels of concern and the equipment failure for this sample does not reduce the usability of the data collected or affect the conclusions made from the data.

The ambient air sample from the Weichert Realtors space (formerly Clear Payments and Future State Consulting) was not collected due to inability to make contact with the tenant. Despite multiple attempts by Apex and the building owner, the tenant could not be contacted and therefore access to the building was not provided.

2.0 Investigation Activities

2.1 Preparatory Activities

Site Health and Safety Plan. A Site-specific health and safety plan (HASP) was prepared for the field activities and included in the Work Plan. The HASP was prepared in general accordance with the Occupational Safety and Health Administration and the Oregon Administrative Rules. A copy of the HASP was maintained on-site during field activities.

Property Access. The DEQ and Apex coordinated with the property owners of the Tigard Cleaners building (to access Tigard Cleaners and Kepler's spaces), Weichert Realtors building (former Clear Payments and Future State), and the Saxony-Pacific Property to obtain access. Apex provided notification to the tenants of Tigard Cleaners and Weichert Realtors buildings at least one week prior to investigation activities. As noted above, the tenants of the Weichert Realtors space did not respond to requests for access.

Subcontractor Solicitation. Analytical laboratory services were provided by Pace Analytical National under their existing Price Agreement with the State of Oregon.

2.2 August 2023 Media Monitoring Event

The media monitoring event was performed at the Site on August 28, 2023, to evaluate the performance of IRM measures that were implemented in 2022. The monitoring included the collection and analysis of groundwater and ambient air samples.

2.2.1 Groundwater Monitoring

The groundwater monitoring event was conducted on August 28, 2023, approximately six months after completing the most recent groundwater IRM (which was completed in February 2023). The depth to groundwater was measured in each well to the nearest 0.01 foot using an electronic water level probe. The measured depths to groundwater and resultant groundwater elevations are included in Table 1 and are presented on Figure 3. During this event, groundwater at the Site was encountered at depths between 1.80 feet and 6.73 feet bgs in the upper conductive zone and between 5.94 feet and 12.64 feet bgs in the lower conductive zone. The groundwater flow gradient at the Site varies and includes local flow gradients towards an apparent sink in the vicinity of MW-6 with localized gradients toward the north-northwest, south-southeast, and west-southwest (with magnitudes ranging from 0.08 feet/foot [ft/ft] to 0.31 ft/ft), converging on an apparent groundwater channel that results in an overall groundwater flow direction that is predominantly in the west-southwesterly direction towards Fanno Creek, which is consistent with previous observations.

During the monitoring event, groundwater samples were collected from monitoring wells MW-1 through MW-7, MW-2i, and MW-6i using a peristaltic pump. Samples were collected by inserting clean polyethylene tubing down the ¾-inch or 2-inch diameter well casing to the middle interval of the wetted well screen. Samples were collected using low flow techniques. Prior to sample collection, wells were purged by pumping at a low flow rate (less than 0.5 liters per minute) while periodically monitoring the water quality parameters (i.e., pH, temperature, specific conductivity, dissolved oxygen, and oxygen reduction potential). Samples were collected after water quality parameters stabilized to within 10 percent for three consecutive three-minute intervals. Sampling field sheets are available in Appendix A.

2.2.2 Air/Vapor Monitoring

Ambient air samples were collected from inside Kepler's Upholstery and from outside approximately 10 feet northwest of the main building of Tigard Cleaners (Figure 2) on August 28, 2023. As discussed above, a sample was not collected from Weichert Realtors.

The indoor air sample was collected from Kepler's Upholstery to evaluate the indoor air quality. Prior monitoring events in the Kepler's Upholstery building have consistently identified concentrations of TCE above the applicable DEQ RBCs. The outdoor air sample was collected to evaluate if a correlation exists between outdoor air concentrations and indoor ambient air concentrations.

The samples were collected in 6-liter Summa canisters with eight-hour flow controllers and were located within typical breathing air spaces, set at an approximate height of 3 to 5 feet above ground surface.

2.3 Handling of Investigation-Derived Waste

Investigation-derived waste (IDW) accumulated during the August 2023 media monitoring event consisted of monitoring well purge water and personal protective equipment (PPE). Water IDW was placed in a properly labeled drum and temporarily stored at a pre-approved location at the Site. Sampling materials and PPE were disposed of as solid waste.

3.0 Chemical Analysis and Results

The following section describes the results of the August 2023 media monitoring event.

3.1 Analyses Performed

Based on the use of the facility for current and historical dry-cleaning uses, PCE is the source contaminant of concern. However, PCE can naturally degrade through a stepwise process of reductive dechlorination to breakdown products TCE, DCE, VC, and ethene. Therefore, these analytes are included in the evaluation of Site conditions.

Groundwater samples collected from MW-1 through MW-7, MW-2i, and MW-6i were analyzed for VOCs (including the target chloroethenes) by Environmental Protection Agency (EPA) Method 8260C. Groundwater samples collected from monitoring wells MW-1, MW-2, MW-4, and MW-5 were also analyzed for total organic carbon (TOC) by EPA Method SW9060A.

Ambient air and system effluent samples were analyzed for VOCs by EPA Method TO-15.

3.2 Media Monitoring Analytical Results

The sections below summarize the analytical results for each of the sampled media from the August 2023 media monitoring event. Groundwater results are presented in Tables 2 and 3 and are shown on Figure 4. Ambient air sample results are presented in Table 4 and are shown on Figure 5. Even though no system effluent sample was collected during this event, the previously collected results are presented in Table 5 and shown on Figure 5. Laboratory analytical reports and the associated data quality review are included in Appendix B. Historical measurements are provided in Appendix C.

3.2.1 Groundwater Samples

PCE was detected above laboratory reporting limits (RLs) in four of the nine groundwater samples collected during the sampling event (monitoring wells MW-1, MW-3, MW-4, and MW-2i). The detected concentrations of PCE ranged from 73.7 micrograms per liter (µg/L) in MW-3 (located north of the back building of Tigard Cleaners) to 19,200 µg/L in well MW-1 (located west of the back building of Tigard Cleaners). Three of the four detected concentrations increased compared to the February 2023 monitoring event (MW-1, MW-3, and MW-2i) while the concentration in MW-4 decreased. The most significant increase was seen in MW-1 with a concentration of 19,200 µg/L compared to the last two monitoring events which did not have detectable concentrations of PCE (with an RL of 500 µg/L). This concentration is within the same order of magnitude as historical concentrations and is below the maximum seen at this well of 64,100 µg/L in June 2018. The concentration in MW-2i is the highest seen in this well, but only slightly with the August 2023 concentration of 368 µg/L compared to the previous high of 365 µg/L.

TCE was detected in two of the nine groundwater samples (MW-3 and MW-4) and an elevated RL of 20,000 µg/L was reported in MW-1. These three wells have consistently had detectable concentrations of TCE as compared to other wells which generally have concentrations below RLs. Concentrations in MW-3 and MW-4 are lower than those seen in February 2023 and below the historical maximum concentrations (by 93 and 96 percent respectively).

DCE was detected in all nine groundwater samples collected which is consistent with previous events. DCE concentrations ranged from 0.509 µg/L in well MW-6i to 441,000 µg/L in source area well MW-1. Compared to the February 2023 event, the concentration of DCE increased in wells MW-4, MW-5, MW2i and MW-6i and decreased in MW-1, MW-2, MW-3, and MW-7.

VC was detected in six of the nine groundwater samples collected. MW-1 did not have a detected concentration of VC but had an elevated RL of 20,000 µg/L. Detected concentrations of VC ranged from 5.4 µg/L in MW-7 to 26,700 µg/L in MW-4. VC chloride concentrations in wells MW-2, MW-2i, and MW-4 increased compared to the February 2023 event, while wells MW-3, and MW-7 decreased.

Reductive Dechlorination of PCE. Evidence of reductive dechlorination (the stepwise substitution of a chlorine atom on a saturated chloroethene molecule with a hydrogen atom) was observed in most monitoring wells (at varying degrees) during this event and is discussed in more detail below. Concentration trend plots for PCE, TCE, DCE, and VC in select monitoring wells are available in Appendix D.

Through reductive dechlorination, it is expected that each successive stage would be characterized by a reduction in the concentration of the more saturated chloroethene and a corresponding increase in the less saturated chloroethene (e.g., PCE concentrations would decrease while TCE concentrations increase, then in sequence the TCE concentrations would decrease while DCE concentrations would increase, and the pattern would continue until the final reduction of VC to ethene). Since the groundwater IRM in August 2022, source area wells MW-3 and MW-4 have shown a significant decrease in PCE and TCE concentrations correlated with a corresponding increase in DCE and VC concentrations (as expected), although the relative changes in concentration vary by well. Source area well MW-1 has not had detectable concentrations of PCE and TCE during the previous two monitoring events so a reduction in PCE and TCE concentration cannot be calculated, but there has been an increase in DCE concentrations since the August 2022 groundwater IRM. These trends can be seen in the concentration trend plots in Appendix D.

Upgradient monitoring well MW-5 consistently shows low or no detections of chlorinated compounds.

Source area wells MW-1 and MW-4 show relatively higher detections of PCE and TCE compared to source area well MW-3 which has low or no detections. The persistence of PCE and TCE concentrations in MW-1 and MW-4 indicate that source materials are likely still present in the vicinity, and the magnitude of the concentrations (historically in excess of 10 percent of the solubility of the compound) suggests that the source areas likely include non-aqueous-phase liquids (NAPLs); although no liquid NAPLs have been encountered at the Site in borings within the source areas, it may be present as a separate-phase liquid adsorbed to the soil grains. The injection of the ZVI in this area is expected to reduce the mass of NAPL that may be present in this area.

PCE and TCE have continued to be below the detection limits, or only slightly above, in the downgradient wells (MW-2, MW-2i, MW-6, MW 6i and MW-7). The intermediate wells (MW-2i and MW-6i) have a decreasing trend of DCE and VC consistent with advanced stages of the reductive dechlorination process (see trend plots in Appendix D). Downgradient wells (MW 6 and MW-7) show similar advanced stage trends, and MW-2 contains apparent seasonal fluctuations in DCE and VC.

Total Molar Ethenes. Assessment of total molar ethene concentrations can be used to evaluate changes in the total population of the chloroethene molecules as the degradation continues from the chloride-saturated PCE (the heaviest molecular weight of the chloroethenes) through the relatively chloride-poor VC, without biasing the evaluation of the concentration data based on the different molecular weights of each compound. A summary of concentrations of the chloroethene VOC compounds observed in

the August 2023 monitoring event are presented in Table 2 and Figure 4. Total molar ethene concentrations observed in MW-1, MW-2, MW-3, and MW-7 decreased in August 2023 as compared the February 2023. Concentrations in MW-2i, MW-4, MW-5, MW-6i increased as compared to February 2023, consistent with ongoing contributions from likely source material in the vicinity of these wells. Monitoring wells MW-3, MW-6, and MW-7 showed the relatively lowest total molar concentrations that have been observed in these wells.

Natural Attenuation Chemistry. Monitoring wells MW-1, MW-2, MW-4, MW-5, and MW-6 were analyzed for TOC, which is representative of the residual bioremediation substrate that was injected in 2022 (which is in turn representative of the bioavailable hydrocarbon supply required for facilitating the reductive dechlorination process). Analytical results of natural attenuation analyses are summarized in Table 3. TOC was detected in all analyzed samples at concentrations between 6,580 µg/L (MW-6) and 46,300 µg/L (MW-2). Concentrations of TOC increased in all wells compared to the February 2023 event.

Monitoring well MW-5 is located upgradient of the treatment injection area and is indicative of the naturally occurring organic carbon entering the system. The TOC concentration in this well has varied significantly (from <1,000 µg/L to 18,900 µg/L), with the relatively higher concentrations occurring during the fall monitoring events, suggesting that the flux of organic carbon entering the system may be seasonally influenced. The concentration of TOC in MW-5 in this event was lower than all other wells except for MW-6.

A TOC concentration above 20,000 µg/L is recommended to sufficiently support microbial growth. The TOC concentrations in the sampled wells are near or above that threshold with the exception of MW-5 and MW-6. As MW-5 is upgradient and injections were not conducted in that area and is not expected to have elevated concentrations of TOC. MW-6 is the farthest downgradient from the injection locations and may have increased concentrations of TOC over time.

3.2.2 Air/Vapor Monitoring Samples

This section summarizes the analytical results from the ambient air samples collected during the August 2023 monitoring event. Analytical results are included in Table 4 and are shown on Figure 5. Laboratory analytical reports are included in Appendix B.

Ambient air samples were collected from one indoor location (Kepler's; AMB-5) and one outside location (AMB-OUT; located approximately 10 feet northwest of Tigard Cleaner's main building). PCE was not detected in the sample from Kepler's and was detected at a concentration of 9.71 µg/m^3 in the outdoor ambient sample. TCE was detected in the sample from Kepler's at a concentration of 101 µg/m^3 and not detected above laboratory RLs in the outdoor ambient sample. The concentration from within Kepler's is one order of magnitude lower than the prior monitoring event in February 2023, and is the lowest recorded in the space. DCE was not detected in the sample from Kepler's and was detected in the outdoor sample with a concentration of 1.32 µg/m^3. VC was not detected in either sample during this monitoring event.

4.0 Risk-Based Screening

The following sections describe the analytical results from the groundwater and ambient air sampling as they compare to DEQ RBC screening levels.

4.1 Groundwater Risk-Based Screening

Analytical results of the groundwater samples were compared to the applicable DEQ RBCs (DEQ, 2023), which include:

- Groundwater volatilization to outdoor air for urban residential and commercial scenarios; and
- Groundwater direct contact under construction and excavation worker exposure scenarios.

The RBCs used in the risk screening were chosen based on the current and reasonably likely future receptors and probable exposure pathways. These RBCs are listed with the data in Table 2. Analytical results exceeding the aforementioned screening levels are shaded in the tables.

The samples collected from upgradient well MW-5 and downgradient wells MW-2, MW-6, MW-6i, and MW-7 did not contain any analytes with concentrations that exceeded applicable RBCs. Each of the other wells had one or more RBC exceedances, as discussed below.

Groundwater Volatilization to Outdoor Air – Urban Residential. PCE and TCE were not detected in the groundwater samples at concentrations that exceed the urban residential RBC (though the RL for MW-1 was above the RBC). VC was detected at concentrations that exceed the urban residential RBC in monitoring wells MW-2i and MW-4 by factors of 1.1 (MW-2i) and 62 (MW-4). The detection limit for VC was above the RBC in the MW-1 sample. The RBC for DCE exceeds the solubility limit of the analyte and therefore cannot be exceeded.

Groundwater Volatilization to Outdoor Air – Occupational. TCE was not detected in groundwater samples at concentrations that exceed the RBC, though the reporting limit for MW-1 was the same as the RBC (20,000 µg/L). VC was detected in monitoring well W-4 at a concentration that exceeds the RBC by factor of 4.5. The PCE and DCE RBCs for groundwater volatilization to outdoor air for occupational scenarios are above the solubility limit of the analytes and therefore cannot be exceeded.

Groundwater in Excavation – Construction and Excavation. PCE was detected in monitoring well MW-1 at a concentration that exceeds the construction and excavation worker RBC for groundwater in excavations by a factor of 3.4. TCE was detected in monitoring well MW-4 at a concentration that exceeded the RBC by a factor of 3.7, though the detection limit for TCE was above the RBC in the MW-1 sample. DCE was detected at concentrations that exceed the RBC in wells MW-1 and MW-4 by factors of 25 and 4.2, respectively. VC

was detected at a concentration that exceeds the RBC in monitoring well sample MW-4 by a factor of 28, though the detection limit for VC was above the RBC in the MW-1 sample.

4.2 Ambient Air Risk-Based Screening

Analytical results of the ambient air samples were compared to the applicable DEQ RBCs and vapor intrusion guidance (DEQ, 2023), which include:

- Air inhalation for residential and commercial scenarios.

The RBCs used in the risk screening were chosen based on the current and reasonably likely future receptors and probable exposure pathways. These RBCs are listed with the data in Table 4. Analytical results exceeding the aforementioned screening levels are shaded in the tables.

Air Inhalation – Residential. TCE was detected in the ambient air sample from Kepler's (AMB-5) at a concentration that exceeds the chronic and acute RBCs by factors of approximately 210 and 48, respectively. There were no exceedances of applicable RBCs for PCE, DCE, or VC.

Air Inhalation – Commercial. TCE was detected in the ambient air sample from Kepler's (AMB-5) at a concentration that exceeds the chronic and acute RBCs by factors of approximately 34 and 16, respectively. There were no exceedances of applicable RBCs for PCE, DCE, or VC.

TCE was the only analyte that exceeded an air inhalation RBC, limited to the sample collected from Kepler's (AMB-5). TCE concentrations in the Kepler's building have consistently been elevated and based on the results of the additional investigation and historical data, these concentrations are unrelated to activities at Tigard Cleaners and are associated with a separate (but undefined) source.

5.0 Conclusions and Recommendations

Consistent with prior sampling events, PCE and associated degradation byproducts are present at the Site in groundwater and ambient air. Concentrations of PCE, TCE, DCE, and VC that exceed applicable DEQ RBCs were observed in groundwater and/or ambient air during this event.

The groundwater sample collected from the upgradient well MW-5 has consistently exhibited VOC concentrations that are below applicable RBCs (and non-detect for PCE and TCE during this event).

The three wells located in or near the source areas include MW-3 (located north of the back building; hydraulically cross gradient), MW-1 (immediately southwest of the back building; hydraulically downgradient), and MW-4 (at the source area of the main building). PCE exceeded at least one applicable RBC in MW-1.

TCE exceeded at least one RBC in MW-4. DCE exceeded at least one RBC in MW-1 and MW-4. VC exceeded at least one RBC in MW-4 and MW-2i.

Groundwater collected from downgradient wells MW-2, MW-6, MW-6i, and MW-7 did not exceed applicable RBCs. Groundwater collected from downgradient intermediate-zone well MW-2i contained higher concentrations of chloroethenes than observed in the adjacent MW-2 and exceeded at least one RBC for VC. These results indicate the groundwater contaminant plume continues to be present in the lower conductive layer downgradient from the main building and back building source areas.

Air samples collected from inside Kepler's (AMB-5) contained concentrations of TCE that exceed occupational air inhalation RBCs, consistent with historical sampling results. The concentration is an order of magnitude lower than the previous sampling event. The ratio of the TCE to PCE concentration in AMB-5 is disproportionate compared to the other indoor air samples, and the TCE concentration in this one sample is uniquely higher than the PCE concentration by an order of magnitude. The groundwater monitoring wells nearest the Kepler's sample, MW-4 and MW-5, do not show relatively higher TCE concentrations than PCE, and the Kepler's sample is located upgradient of the source area. However, in other monitoring wells located downgradient of the source area (MW-1, MW-6, and MW-7), higher concentrations of TCE relative to PCE are sometimes observed. There are no monitoring wells at Kepler's space nor upgradient of MW-4 to verify if groundwater in the area reflects the ratio of PCE to TCE observed at Kepler's.

While the degradation of the chloroethene VOCs continues to occur across the Site, it is likely that DNAPLs are present beneath both site buildings. These likely source areas were the target of the 2022 focused-area treatment which included more aggressive treatment as compared to the dissolved phase plume (including the injection of the ZVI which supports an abiotic destruction of the source-area chloroethenes). The dissolved-phase contaminant plume likely extends laterally downgradient onto the Saxony-Pacific Property west of the Site, and the plume has infiltrated to the deeper transmissive layers beneath the Site.

Since the groundwater IRM in August 2022, the site wells in the source area have shown a significant decrease in PCE and TCE concentrations correlated with an increase in DCE and VC concentrations (as expected), although the relative changes in concentration vary by monitoring well. The intermediate wells have a decreasing trend of DCE and VC consistent with advanced stages of the reductive dechlorination process. Downgradient wells MW-2 and MW-7 show similar advanced stage trends, and MW-2 contains apparent seasonal fluctuations in DCE and VC.

Ambient air does not show unacceptable risk with the exception of TCE in Kepler's Upholstery which has been demonstrated to be unassociated with the dry cleaner operations. This is further supported by the indoor ambient air samples being non-detect for DCE and VC even as those compounds are present at increased concentrations in the groundwater samples due to the ongoing reductive dechlorination process.

Reductive dechlorination, as a result of the 2022 expanded groundwater IRM, continues to be observed in most monitoring wells (at varying stages). Evidence of increased reductive dechlorination in the source area is observed in source area wells MW-3 and MW-4 which have shown a significant decrease in PCE and TCE concentrations correlated with an increase in DCE and VC concentrations, although the relative changes in concentration vary by monitoring well. The recent increase in PCE concentrations in MW-1 observed during this monitoring event are evidence of a continuing source material in the vicinity of the well, which will continue to exhibit varying influence on the well until the source concentrations have been reduced. As the injection products continue to migrate and increase contact with more microorganisms in the target zones, greater rates of reductive dechlorination are anticipated. Additionally, the ZVI injection is expected to increase abiotic degradation of the chloroethene molecules while also enhancing anaerobic reductive dechlorination near the PCE source. It is anticipated that the overall chloroethene mass (described by the total molar ethene concentration) will continue to show a decreasing trend as the biotic (reductive dechlorination) and abiotic (ZVI) processes continue to be effective at the Site.

6.0 References

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Table 1
Groundwater Elevation Data
Tigard Cleaners
Tigard, Oregon

Well Identification	Date	Screened Interval (feet bgs)	Top of Casing (feet MSL)	Depth to Water (feet bgs)	Depth to Product (feet bgs)	Product Thickness (feet bgs)	Groundwater Elevation (feet MSL)
Shallow Wells							
MW-1							
	10/20/2021	7-17	154.054	5.03	--	--	149.02
	10/19/2022			4.90	--	--	149.15
	2/21/2023			3.70	--	--	150.35
	8/28/2023			4.94	--	--	149.11
MW-2							
	10/20/2021	7-17	154.85	3.11	--	--	151.74
	10/19/2022			7.26	--	--	147.59
	2/21/2023			8.62	--	--	146.23
	8/28/2023			5.25	--	--	149.60
MW-3							
	5/26/2022	7-17	155.293	--	--	--	--
	10/19/2022			6.27	--	--	149.02
	2/21/2023			5.17	--	--	150.12
	8/28/2023			6.73	--	--	
MW-4							
	10/20/2021	7-17	155.54	5.48	--	--	150.06
	10/19/2022			5.70	--	--	149.84
	2/21/2023			5.19	--	--	150.35
	8/28/2023			6.09	--	--	149.45
MW-5							
	10/20/2021	7-17	154.688	4.40	--	--	150.29
	10/19/2022			4.80	--	--	149.89
	2/21/2023			4.28	--	--	150.41
	8/28/2023			4.91	--	--	149.78
MW-6							
	10/20/2021	10-20	153.319	9.42	--	--	143.90
	10/19/2022			4.82	--	--	148.50
	2/21/2023			7.02	--	--	146.30
	8/28/2023			1.80	--	--	151.52
MW-7							
	10/20/2021	10-20	153.992	4.94	--	--	149.05
	10/19/2022			4.85	--	--	149.14
	2/21/2023			5.00	--	--	148.99
	8/28/2023			4.52	--	--	149.47

Please see notes at end of table

Table 1
Groundwater Elevation Data
Tigard Cleaners
Tigard, Oregon

Well Identification	Date	Screened Interval (feet bgs)	Top of Casing (feet MSL)	Depth to Water (feet bgs)	Depth to Product (feet bgs)	Product Thickness (feet bgs)	Groundwater Elevation (feet MSL)
Intermediate Wells							
MW-2i							
	10/20/2021	33.25-43.25	154.21	6.20	--	--	148.01
	10/19/2022			4.29	--	--	149.92
	2/21/2023			7.03	--	--	147.18
	8/28/2023			5.94	--	--	148.27
MW-6i							
	10/20/2021	24.58-34.58	153.17	7.90	--	--	145.27
	10/19/2022			8.23	--	--	144.94
	2/21/2023			3.81	--	--	149.36
	8/28/2023			12.64	--	--	140.53

Notes:

1. bgs = below ground surface.
2. feet MSL = feet above mean sea level.
3. -- = Data not available or no product was measured.

Table 2
Groundwater Analytical Results for Volatile Organic Compounds
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Analyte Concentration in µg/L				Total Molar VOCs in µmol/L
		PCE	TCE	cis-1,2-DCE	Vinyl Chloride	
Upgradient						
MW-5						
	10/20/2021	<1.00	**0.261 J**	**9.06**	**0.433 J+**	**0.111 J**
	10/18/2022	<1.00	<1.00	<1.00	<1.00	<1.00
	2/21/2023	<1.00	<1.00	**0.466 J**	**0.439 J**	**0.024 J**
	8/28/2023	<1.00	<1.00	**2.23 J**	<1.00	**0.043 J**
Source Area						
MW-1						
	10/20/2021	**9,940 J**	**21,200**	**279,000**	**18,700 J+**	**3,502**
	10/19/2022	<500	<500	**217,000**	**37,200**	**2,847**
	2/21/2023	<500	<500	**468,000**	**30,100**	**5,360**
	8/28/2023	**19,200**	<20,000	**441,000**	<20,000	**5,004**
MW-3						
	10/20/2021	**1,560**	**821**	**3,150**	**467 J+**	**56.1**
	10/19/2022	<100	<100	**2,520**	**92.2 J**	**28.7**
	2/21/2023	**36.5 J**	**150**	**7,510**	**938**	**94.1**
	8/28/2023	**73.7 J**	**117**	**658**	**205**	**11.5**
MW-4						
	10/20/2021	**27,400**	**9,890**	**64,900**	**21,700**	**1,267**
	10/19/2022	**78,000**	**11,500**	**76,400**	**13,000**	**1,564**
	2/21/2023	**7,410**	**1,990**	**68,100**	**17,800**	**1,057**
	8/28/2023	**5,050**	**1,610**	**75,200**	**26,700**	**1,256**
Downgradient						
MW-2						
	10/20/2021	<1.00	<1.00	**32.2**	**34.2 J+**	**0.888**
	10/18/2022	<1.00	<1.00	**8.55**	**2.88**	**0.144**
	2/21/2023	<1.00	**0.229 J**	**57.1**	**12.0**	**0.788**
	8/28/2023	<1.00	<1.00	**5.65**	**12.4**	**0.269**
MW-2i						
	10/20/2021	<500	<500	**19,600**	**4,820 J+**	**285**
	10/19/2022	<500	<500	**34,000**	**8,700**	**496**
	2/21/2023	<100	<100	**12,600**	**230**	**135**
	8/28/2023	**368**	<500	**16,900**	**465**	**188**

Please see notes at end of table.

Table 2
Groundwater Analytical Results for Volatile Organic Compounds
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Analyte Concentration in µg/L				Total Molar VOCs in µmol/L
		PCE	TCE	cis-1,2-DCE	Vinyl Chloride	
MW-6						
	10/20/2021	<25.0	**9.65 J**	**1,970**	**879**	**34.6**
	10/18/2022	<25.0	<25.0	**1,320**	**906**	**28.3**
	2/21/2023	Stormwater flowing into well monument, no sample collected				
	8/28/2023	<25.0	<25.0	**218**	**417**	**9**
MW-6i						
	10/20/2021	<1.00	<1.00	**0.779 J**	<1.00	**0.025**
	10/18/2022	<1.00	<1.00	**0.950 J**	<1.00	**0.027**
	2/21/2023	<1.00	<1.00	**0.257 J**	<1.00	**0.023**
	8/28/2023	<1.00	<1.00	**0.509 J**	<1.00	**0.025**
MW-7						
	10/20/2021	<5.00	<5.00	**101**	**259 J+**	**5.23**
	10/18/2022	<5.00	<5.00	**45.9**	**46.0**	**1.27**
	2/21/2023	<1.00	<1.00	**11.2**	**11.4 J**	**0.309**
	8/28/2023	<1.00	<1.00	**7.22**	**5.35 J**	**0.173**
GW Volatilization to Outdoor Air	Urban Residential	150,000	6,900	--	430	**--**
	Occupational	--	20,000	--	5,900	**--**
GW in Excavations	Construction and Excavation Worker	5,600	430	18,000	960	--

Notes:

µg/L = micrograms per liter.

PCE = Tetrachloroethene

TCE = Trichloroethene

cis-1,2,-DCE = cis-1,2-Dichloroethene

trans-1,2-DCE = trans-1,2-Dichloroethene

DEQ Risk-Based Concentrations from Oregon Department of Environmental Quality's *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites,* revised May 2018.

Bold values indicate concentration detected above the method detection limit.

Shaded values indicate concentrations detected above one or more applicable RBCs.

< = Concentration was not detected above the shown minimum reporting limit.

-- = Not analyzed or not available.

>S = The RBC exceeds the solubility limit of the analyte.

J = The reported concentration is an estimated quantity.

J+ = Result is an estimated concentration and may be biased high.

Table 3
Groundwater Analytical Results for Total Organic Carbon
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Total Organic Carbon (µg/L)
Upgradient		
MW-5		
	10/20/2021	**5,310**
	10/18/2022	<1,000
	2/21/2023	**5,180**
	8/28/2023	**8,270**
Source Area		
MW-4		
	10/21/2021	**19,500**
	10/19/2022	**111,000 J**
	2/21/2023	**43,900**
	8/28/2023	**45,300**
Downgradient		
MW-1		
	10/20/2021	**11,700**
	10/19/2022	**129,000 J**
	2/21/2023	**18,800**
	8/28/2023	**31,600**
MW-2		
	10/20/2021	--
	10/19/2022	<1,000
	2/21/2023	**44,000**
	8/28/2023	**46,300**
MW-6		
	10/20/2021	**4,620**
	10/18/2022	<1,000
	2/21/2023	--
	8/28/2023	**6,580**

Notes:

µg/L = micrograms per liter.

Bold values indicate concentration detected above the method detection limit.

< = Concentration was not detected above the shown minimum reporting limit.

-- = Not analyzed or not available.

J = The reported concentration is an estimated quantity.

Table 4
Ambient Air Analytical Results
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Analyte Concentration in µg/m3			
		PCE	TCE	cis-1,2-DCE	Vinyl Chloride
AMB-4 / FC-1 (Weichert Realtors)					
	10/20/2021	**3.15**	**2.40**	<0.793	<0.511
	11/3/2022	Could not access space			
	2/21/2023	Could not access space			
	8/28/2023	Could not access space			
AMB-5 / KU-1 (Kepler's Upholstery)					
	10/20/2021	**27.0**	**863**	<15.9	<10.2
	11/3/2022	**18.5**	**7,980**	<0.793	<0.511
	2/21/2023	<27.2	**1,600**	<15.9	<10.2
	8/28/2023	<5.43	**101**	<0.793	<0.511
AMB-OUT (Background Ambient)					
	10/21/2021	**1.72**	<1.07	<0.793	<0.511
	11/3/2022	**5.78**	**1.19**	<0.793	<0.511
	2/21/2023	<1.36	<1.07	<0.793	<0.511
	8/28/2023	**9.71**	<1.07	**1.32**	<0.511
Air Inhalation - Residential	Chronic	11	0.48	42	0.17
	Acute	41	2.1	--	1,300
Air Inhalation - Commercial	Chronic	47	3	180	2.80
	Acute	120	6.3	>Pv	3,900

Notes:

µg/m^3 = microgram per cubic meter

PCE = Tetrachloroethene

TCE = Trichloroethene

cis-1,2,-DCE = cis-1,2-Dichloroethene

trans-1,2-DCE = trans-1,2-Dichloroethene

DEQ Risk-Based Concentrations from Oregon Department of Environmental Quality's *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* , revised May 2018.

Bold values indicate concentration detected above the minimum reporting limit.

Shaded values indicate concentrations detected above one or more applicable RBCs.

< = Concentration was not detected above the shown minimum reporting limit.

-- = Not analyzed or not available.

>Pv = The calculated RBC exceeds the vapor pressure of the pure chemical. This chemical cannot create an unacceptable risk via this pathway.

Table 5
Vapor Collection System Discharge Results
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Analyte Concentration in µg/m3			
		PCE	TCE	cis-1,2-DCE	Vinyl Chloride
EX					
	10/20/2021	**188**	**71.3**	**21.3**	<0.511
	11/3/2022	**126**	**108**	**31.4**	**7.62**
	2/21/2023	**139**	**117**	**26.3**	**8.31**
	8/28/2023	Faulty Summa Canister			
Acceptable Effluent Discharge Concentrations		229,500	8,830	--	1,800

Notes:

µg/m^3 = microgram per cubic meter

PCE = Tetrachloroethene

TCE = Trichloroethene

cis-1,2,-DCE = cis-1,2-Dichloroethene

trans-1,2-DCE = trans-1,2-Dichloroethene

Acceptable Effluent Discharge Concentrations were derived by adjusting DEQ RBCs for urban residential air inhalation attenuation factor calculated from the EPA SCREEN3 dispersion model.

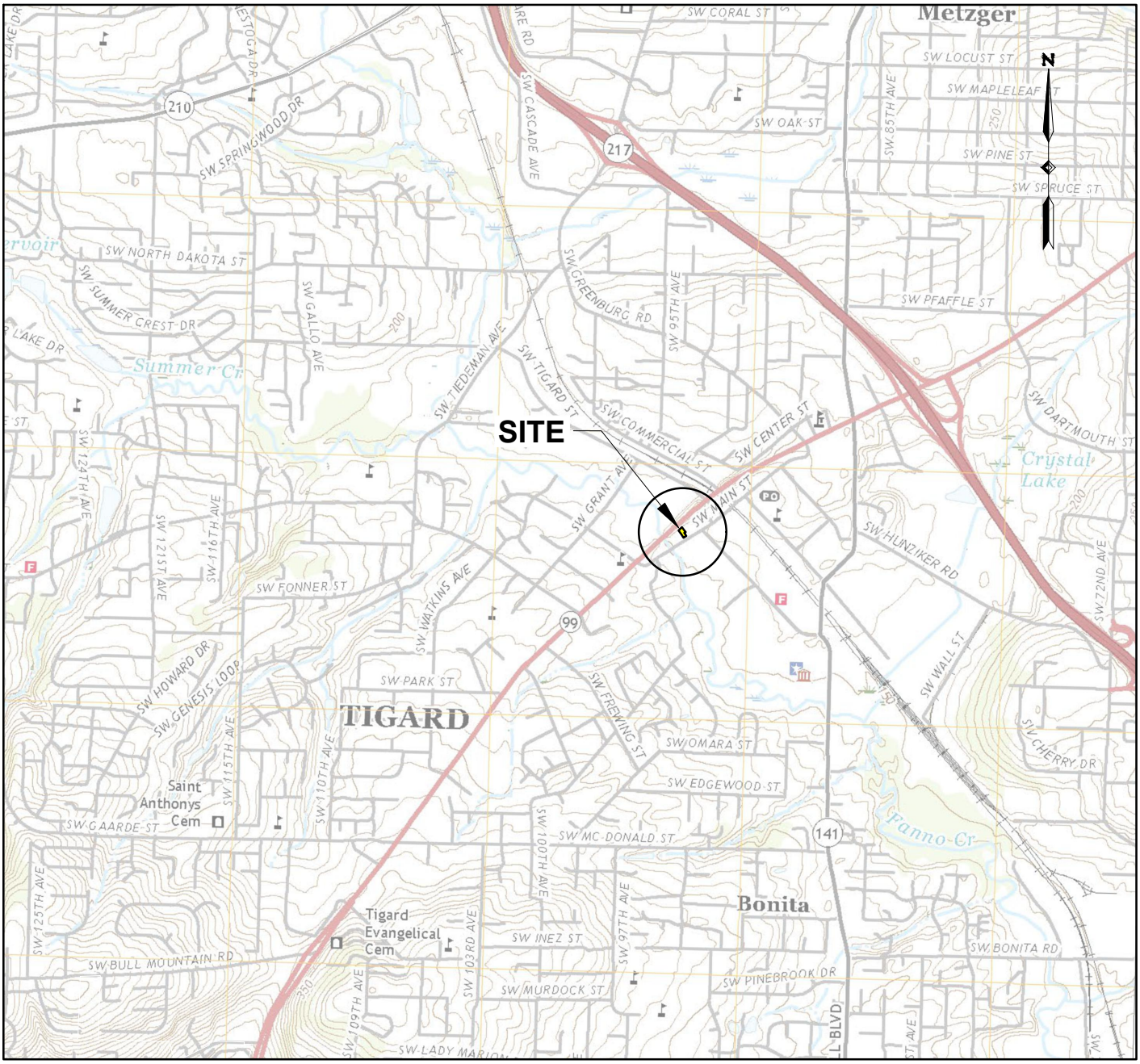
DEQ RBCs = Oregon Department of Environmental Quality's Risk-Based Decision Making for the Remediation of Petroleum Contaminated Sites, revised May 2018.

EPA SCREEN3 = United State Environmental Protection Agency SCREEN3 Model and User's Guide, EPA 454/B-95-00

Bold values indicate concentration detected above the minimum reporting limit.

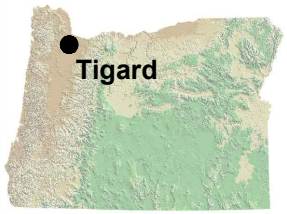
< = Concentration was not detected above the shown minimum reporting limit.

-- = Not analyzed or not available.



Beaverton, Oregon
United States Geological Survey
7.5 Minute Series Topographic Map
Contour Interval: 10 feet
Scale: 1 inch = 24,000 feet
Date: 2020

0 2,000 4,000
Scale in Feet



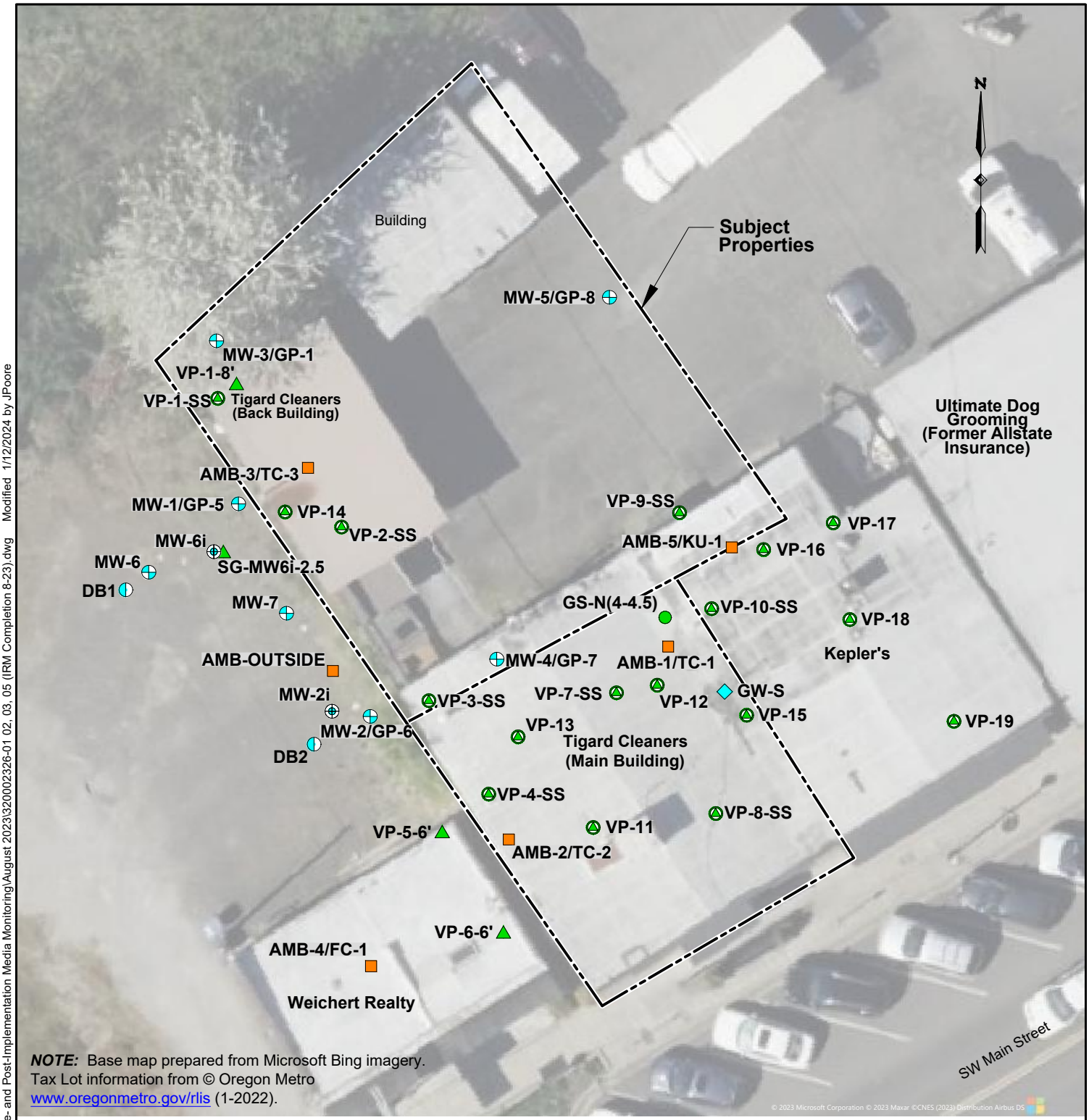
OREGON

Site Location Map

August 2023 Data Report
12519 SW Main Street
Tigard, Oregon

Apex Companies, LLC 15618 SW 72nd Avenue Tigard, Oregon 97224	Project Number: 320002326-01	Drawn: JP	Approved: CO	Figure 1
	March 2024			

I:\Client\DEQ\Oregon\320002326-01 Tigard Cleaners\09 Pre- and Post-Implementation Media Monitoring\August 2023\320002326-01 01 (Site Location).dwg Modified 1/11/2024 by JPoore



NOTE: Base map prepared from Microsoft Bing imagery.
Tax Lot information from © Oregon Metro
www.oregonmetro.gov/rlis (1-2022).

Legend:

- **MW-1** Shallow Monitoring Well Location
- **MW-2i** Intermediate Monitoring Well Location
- **DB1** Deep Boring and Depth-Discrete Sample Location
- **VP-11** Sub-Slab Vapor Sample Location
- **VP-6-6'** Soil Gas Sample Location
- **AMB-1/TC-1** Ambient Air Sample Location
- **GS-N(4-4.5)** Grab Soil Sample Location and (Depth Collected in Feet BGS)
- **GW-S** Grab Groundwater Sample Location

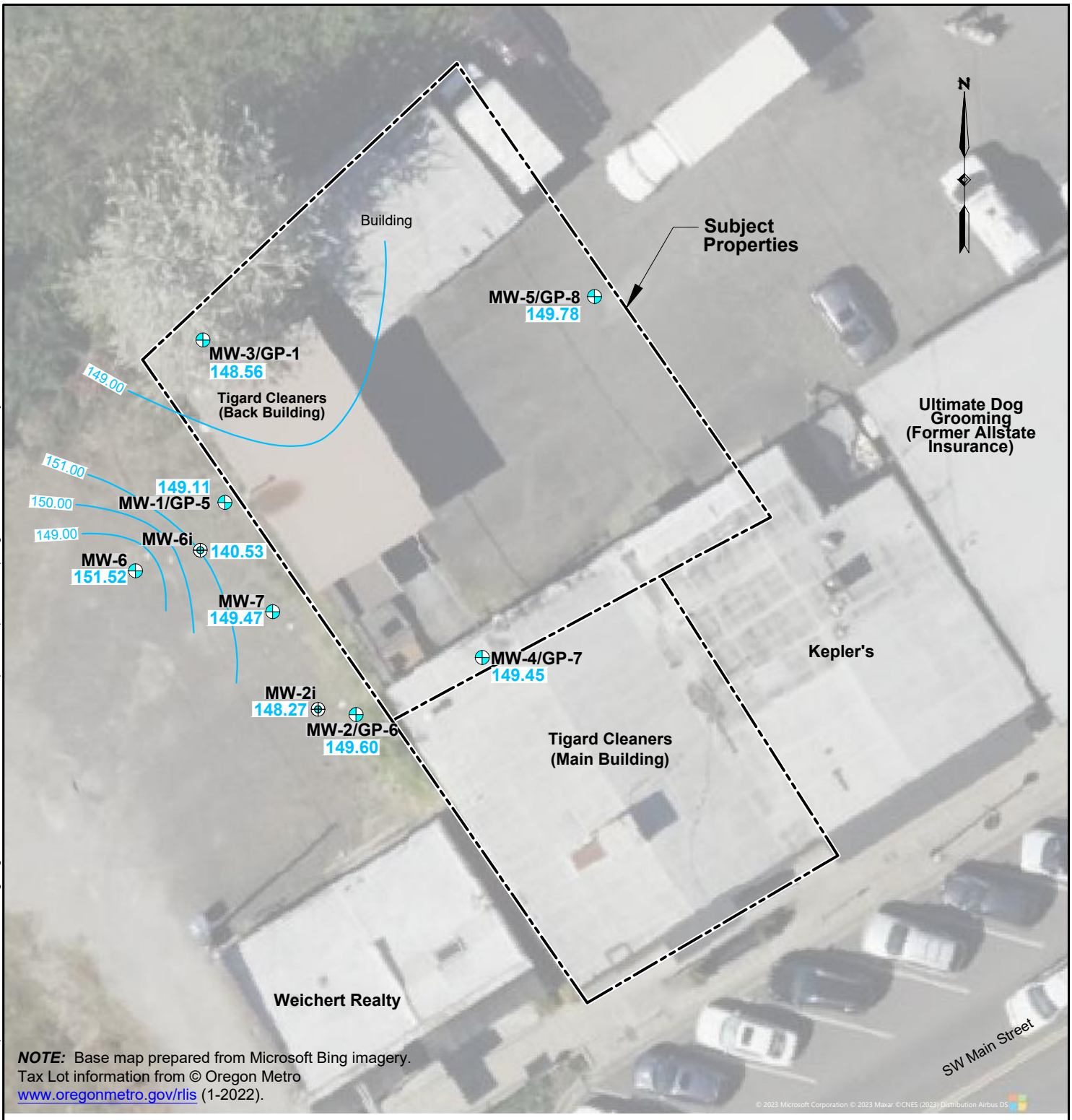
0 20 40
Scale in Feet

Site Plan

August 2023 Data Report
12519 SW Main Street
Tigard, Oregon

Apex Companies, LLC 15618 SW 72nd Avenue Tigard, Oregon 97224	Project Number: 320002326-01	Drawn: JP	Approved: CO	Figure 2
	March 2024			

I:\Client\DEQ\Oregon\320002326-01 Tigard Cleaners\09 Pre- and Post-Implementation Media Monitoring\August 2023\320002326-01 02, 03, 05 (IRM Completion 8-23).dwg Modified 1/12/2024 by JPoore



NOTE: Base map prepared from Microsoft Bing imagery.
Tax Lot information from © Oregon Metro
www.oregonmetro.gov/rlis (1-2022).

Legend:

- **MW-1** — Shallow Monitoring Well Location
- **MW-2i** — Intermediate Monitoring Well Location
- **149.11** — Groundwater Elevation in Feet Above MSL
- 147.00 — Groundwater Elevation Contour in Feet Above MSL

0 20 40
Scale in Feet

Shallow Groundwater Elevations - August 28, 2023

August 2023 Data Report
12519 SW Main Street
Tigard, Oregon

APEX Apex Companies, LLC 15618 SW 72nd Avenue Tigard, Oregon 97224	Project Number: 320002326-01	Drawn: JP	Approved: CO	Figure 3
	March 2024			

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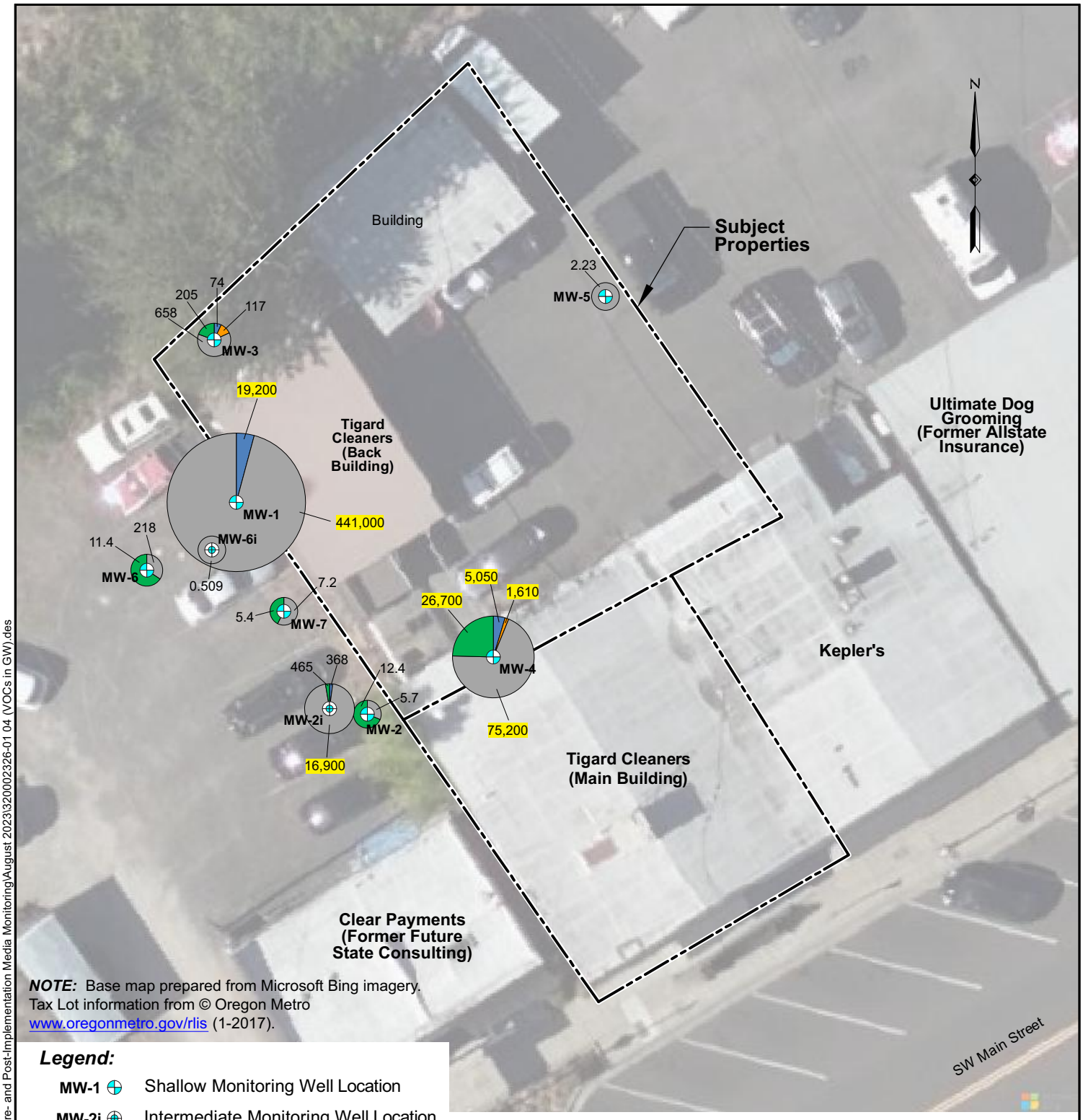


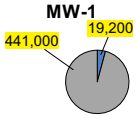
NOTE: Base map prepared from Microsoft Bing imagery.
Tax Lot information from © Oregon Metro
www.oregonmetro.gov/rlis (1-2017).

Legend:

MW-1 Shallow Monitoring Well Location

MW-2i Intermediate Monitoring Well Location

Detected Chloroethenes:



Concentration in µg/L (ppb)

Highlight = Concentration Exceeds One or More of the DEQ Risk-Based Concentrations (See Table 2)

Note: Size of Chart Proportional to Total Molar Chloroethene Concentration

PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
cDCE	CIS-1,2-DICHLOROETHENE
VC	VINYL CHLORIDE

0 20 40

Scale in Feet

VOCs Results in Groundwater - August 28, 2023

August 2023 Data Report
12519 SW Main Street
Tigard, Oregon

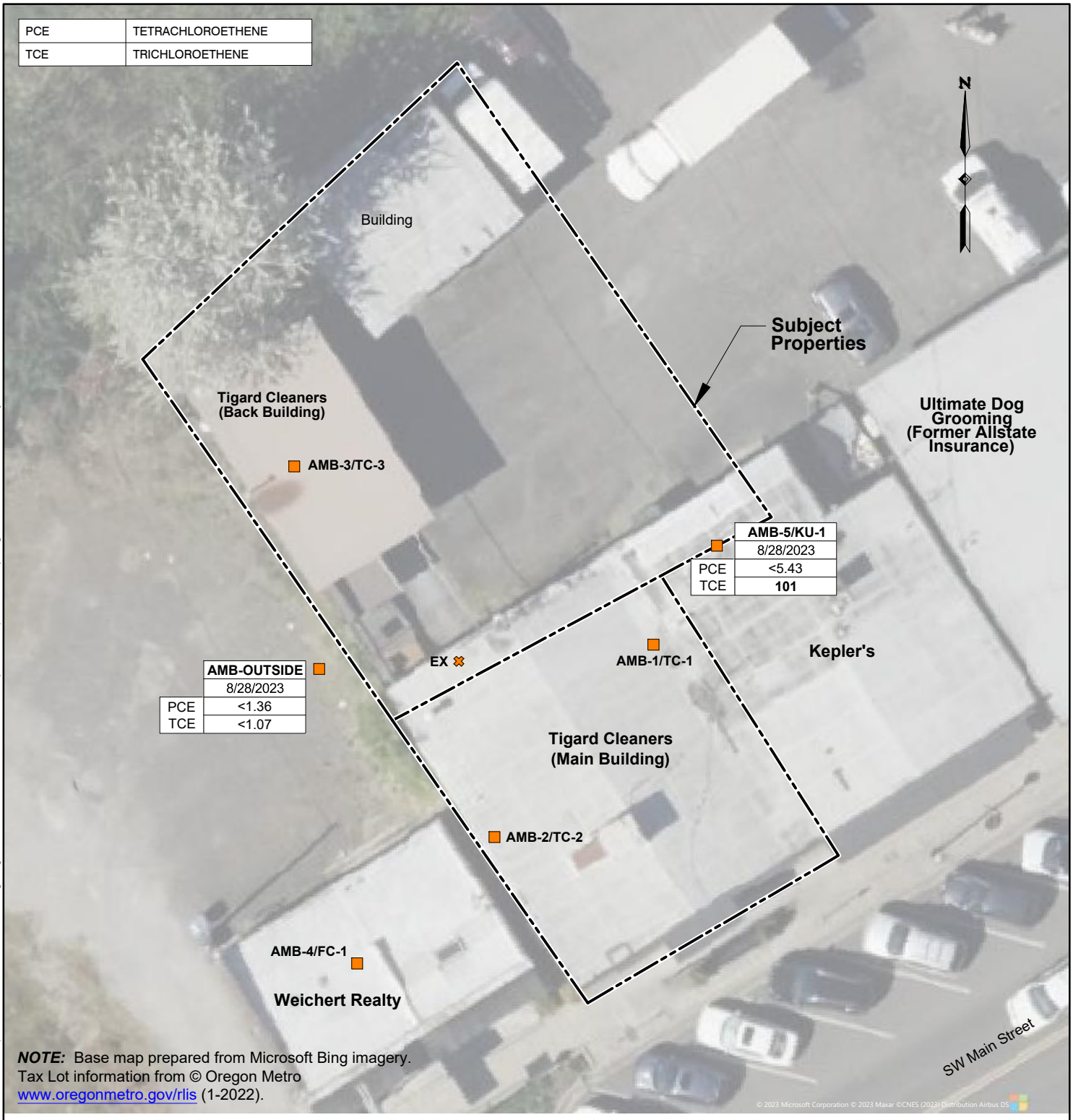
Apex Companies, LLC
15618 SW 72nd Avenue
Tigard, Oregon 97224

Project Number:	Drawn:	Approved:	Figure
320002326-01	JP	CO	4

March 2024

I:\Client\DEQ\Oregon\320002326-01 Tigard Cleaners\09 Pre- and Post-Implementation Media Monitoring\August 2023\320002326-01 04 (VOCs in GW).des

PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE



NOTE: Base map prepared from Microsoft Bing imagery. Tax Lot information from © Oregon Metro www.oregonmetro.gov/rlis (1-2022).

Legend:

AMB-1/TC-1 ■ Ambient Air Sample Location (Summa)

EX ✖ Soil Vapor Extraction System Exhaust Sample Location (Summa)

AMB-5/KU-1	
	8/28/2023
PCE	<5.43
TCE	**101**

Sampling Date

Concentration in µg/m^3

Analyte Sampled

0 20 40

Scale in Feet

Ambient Air and Soil Vapor Extraction System Exhaust Results - August 28, 2023

August 2023 Data Report
12519 SW Main Street
Tigard, Oregon

Apex Companies, LLC
15618 SW 72nd Avenue
Tigard, Oregon 97224

Project Number:	Drawn:	Approved:
320002326-01	JP	CO

March 2024

Figure **5**

I:\Client\DEQ\Oregon\320002326-01 Tigard Cleaners\09 Pre- and Post-Implementation Media Monitoring\August 2023\320002326-01 02, 03, 05 (IRM Completion 8-23).dwg Modified 1/12/2024 by JPoore

Appendix A

Sampling Sheets

WELL GAGING DATA SHEET

APEX

		Job Number:	320002326-01
Client:	DEQ	Date:	8/28/23
Project:	Tigard Cleaners	Sampler:	AE/CW
Weather:	Cloudy 64°	Time In/Out:	9:15 /

WATER LEVEL DATA

Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
~~MW-4~~	12:46		6.09'				
MW-2	9:33		5.25'				
MW-2i	10:05		5.94				
MW-3	9:26		6.73'				
~~MW-1~~	9:58		4.94				
MW-5	9:49		4.91'				
MW-6	~~1.8~~ 17:55		1.80				
MW-6i	18:31		12.64				
MW-7	10:18		4.52'				

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-~~1~~ 1	Job Number:	320002526-01
Client:	DEQ	Date:	~~7/18/23~~ 8/28/23
Project:	Tigard Cleaners	Sampler:	~~A. Evernden~~ CW
Weather:	68° Cloudy	Time In/Out:	1645 / 1740

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	5.90'	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:		Pump Intake Depth:	Comments
Sampling Method:		Tubing Type:	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1720			6.29		7.49	19.99	2.98	9.4%	32		
1723			6.82		7.30	19.47	2.99	0.0%	28		
1726			7.08		7.28	19.81	2.97	0.0%	17		
1729			7.35		7.22	19.95	3.00	0.0	11		
~~1732~~											
~~1735~~											

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-1	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	1735	Final Depth to Water:		Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-2	Job Number:	32000236-01
Client:	DEQ	Date:	8/28/23
Project:	Tigard Cleaners	Sampler:	CW
Weather:	Cloudy 65°	Time In/Out:	1145/1235

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	5.12'	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:		Pump Intake Depth:	Comments
Sampling Method:		Tubing Type:	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
11:58			7.75		9.02	18.08	1.28	2.5%	-44		
12:01			8.14		8.71	18.09	1.28	1.69%	-45		
12:04			8.81		8.39	18.25°	1.28	0.9%	-46		
1207			9.55		8.10	18.29	1.27	0.7	-44		
1210			10.09		7.95	18.28	1.26	0.0	-43		
1213			10.69		8.25	18.32	1.23	0.0	-41		
1216			11.35		8.16	18.35	1.19	0.0	-36		

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-2	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	1221	Final Depth to Water:		Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-2i	Job Number:	320002326-01
Client:	DEQ	Date:	8/28/23
Project:	Tigard Cleaners	Sampler:	A. Everenden CW
Weather:	68° Cloudy	Time In/Out:	1500/1558

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	5.84'	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:		Pump Intake Depth:	
Sampling Method:		Tubing Type:	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1515			5.84		7.90	18.55	.781	15.0%	63		
1518			8.17		7.94	18.68	.776	5.0%	61		
1521			9.53		7.80	18.97	.776	4.8%	69		
1524			10.32		7.71	19.11	.777	12.3%	77		
1527			11.20		7.65	19.21	.776	16.0%	85		
1530			11.94		7.65	19.40	.765	19.6%	89		
1533			12.35		7.54	19.57	.760	21.5%	98		
~~1536~~											

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-2i	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	1552	Final Depth to Water:		Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Dewatered @ 1534

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-3	Job Number:	320002326-01
Client:	DEQ	Date:	8/28/23
Project:	Tigard Cleaners	Sampler:	CW
Weather:	64° Cloudy	Time In/Out:	10:30 / 1140

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	6.73'	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:		Pump Intake Depth:		Comments	
Sampling Method:		Tubing Type:			

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
10:51			6.73		8.57	20.69	.000	47.5%	-3		
10:54					8.27	20.87	0.000	77.5%	-2		
10:57					8.99	19.99	0.000	91.7%	-9		
11:00					8.56	20.42	0.000	85.3	15		
11:03					8.45	20.33	.001	85.9	29		

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-3	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	11:20	Final Depth to Water:		Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

DEWATERED. Could not fit probe and tubing into well @ same time

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW4	Job Number:	320002326-01
Client:	DEQ	Date:	8/28/23
Project:	Tigard Cleaners	Sampler:	CW
Weather:	Cloudy 68°	Time In/Out:	1240 / 1326

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	6.09'	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:		Pump Intake Depth:	
Sampling Method:		Tubing Type:	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1254			6.09		7.20	18.84	2.92	5.0%	-28		
1257					6.84	19.05	2.91	2.0%	-7		
1300					6.76	19.13	2.64	0.6%	-5		
1303					6.77	19.20	2.43	0.0%	-8		
1306					6.79	19.28	2.32	0.0%	-10		
1309					6.79	19.29	2.24	0.0%	-12		

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-4	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	1314	Final Depth to Water:		Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Water level meter & tubing would not fit in well @ same time.

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-5	Job Number:	320002326-01
Client:	DEQ	Date:	8/28/23
Project:	Tigard Cleaners	Sampler:	CW
Weather:	68° Cloudy	Time In/Out:	1330 / 1420

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	4.91'	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:		Pump Intake Depth:		Comments	
Sampling Method:		Tubing Type:			

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1342			4.93		7.52	19.69	.959	89.9%	-51		
1345			4.93		7.58	20.02	.899	79.7%	-66		
1348			4.93		7.53	20.65	.882	74.5%	-73		
1351			4.93		7.45	21.48	.849	70.5%	-68		
1354			4.93		7.40	22.09	.808	68.5%	-61		
1357			4.93		7.37	22.33	.785	67.0%	-58		
1400			4.93		7.69	22.56	.773	65.3%	-72		
1403			4.94		7.67	22.67	.767	64.2%	-71		
1406			4.94		7.66	22.66	.761	63.2%	-69		
1409			4.94		7.63	22.67	.756	62.3%	-67		

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-5	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	1413	Final Depth to Water:		Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-6	Job Number:	320002326-01
Client:	NDEQ	Date:	7/18/23
Project:	Figard Cleaners	Sampler:	C. Weer
Weather:	70° Cloudy	Time In/Out:	1755 / 1825

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	~~1.08~~ 1.80	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:				Pump Intake Depth:						Comments	
Sampling Method:				Tubing Type:							
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1805			2.97		7.59	21.27	1.79	5.4%	-26		
1808			3.80		7.66	21.64	1.62	1.3%	-47		
1811			4.64		7.71	21.71	1.57	0.0%	-53		
1814			5.38		7.73	21.47	1.56	0.0%	-54		

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-6	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	1818	Final Depth to Water:		Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-6i	Job Number:	320023226-01
Client:	DEQ	Date:	8/28/23
Project:	Tigard Cleaners	Sampler:	C. Weer
Weather:	70° Cloudy	Time In/Out:	1745 / 1857

WELL DATA

Well Depth:	25'	Well Diameter:		Water Height	
Depth to Water:	12.64	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:		Pump Intake Depth:	
Sampling Method:		Tubing Type:	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1839			12.61		7.65	19.44	2.40	0.0%	-62		
1842			12.74		7.63	18.52	2.62	0.0%	-78		
1845			12.97		7.62	18.26	2.68	0.0%	-86		
1848			13.07		7.62	18.17	2.69	0.0%	-89		

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-6i	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	1853	Final Depth to Water:		Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Very pressurized.

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-7	Job Number:	320002326-01
Client:	DEQ	Date:	~~8/8/23~~ 8/28/23
Project:	Tigard Cleaners	Sampler:	C. Weer
Weather:	68° Cloudy	Time In/Out:	1600/1644

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	4.62'	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:		Pump Intake Depth:	
Sampling Method:		Tubing Type:	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1608			5.82		7.77	20.37	2.23	18.4	68		
1611			6.84		7.67	20.39	2.24	10.1	39		
1614			8.05		7.62	20.43	2.25	16.0	6		
1617			8.65		7.60	20.40	2.25	13.7	0		
1620			8.70		7.70	20.68	2.28	2.3%	-15		
1623			8.70		7.71	20.94	2.28	7.5%	-23		
1626			9.37		7.72	20.90	2.30	13.9	-29		
1629			10.07		7.63	18.22	2.49	4.7%	-30		
1632			10.39		7.58	17.76	2.52	0.0	-38		
1635			10.78		7.57	17.74	2.51	0.0	-42		

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-7	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	1642	Final Depth to Water:		Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Appendix B

Laboratory Reports and Quality Assurance Review

Appendix B – QA/QC Review

This appendix documents the results of a quality assurance/quality control (QA/QC) review of the analytical data for groundwater and vapor samples collected as part of the August 2023 media monitoring activities at Tigard Cleaners. Samples were analyzed by Pace National Analytical of Mount Juliet, Tennessee. Copies of the analytical laboratory reports are included in this appendix, referenced as follows:

Report	Report Date	Sampling Event
L1651174	September 6, 2023	Air Sampling
L1651306	September 14, 2023	Groundwater Sampling

1.0 Analytical Methods

Chemical analyses for groundwater included in this QA Report consisted of the following:

- Volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method 8260D;
- Total organic carbon (TOC) by EPA Method 9060A; and

Ambient air and vapor collection system discharge chemical analysis consisted of the following:

- VOCs by EPA Method TO-15.

2.0 Data Validation

The QA review included examination and validation of the laboratory data packages for the following:

- Analytical preparation and quantitation methods;
- Analytical method holding times;
- Sample handling;
- Chain of custody procedures;
- Detection and reporting limits;
- Method blank detections;
- Laboratory control samples, matrix spikes, and surrogates to assess accuracy; and
- Laboratory control sample duplicates, laboratory duplicates, matrix spike duplicates, and field duplicates to assess precision.

The QA/QC review did not include a review of raw data.

This QA/QC review documents the relationship between analytical findings and data quality objectives based on precision and accuracy. It also summarizes possible error or bias and the effect on data quality and usability.

The laboratory QC samples provided in data packages were used to evaluate laboratory contamination or background interferences, sample preparation efficiency and instrumentation performance. The QC samples provided by the analytical laboratory (consistent with Environmental Protection Agency [EPA] guidance) include: method blanks, laboratory control samples (LCS/LCSD), matrix spikes (MS/MSD), and laboratory duplicates. Surrogates are also required for VOC analysis to assess sample preparation efficiency and matrix interferences.

2.1 Data Qualifiers

Any data that is found to have possible bias or error was qualified and flagged. The following are definitions of qualifiers used in this data quality report and data tables.

J	The reported concentration is an estimated quantity.

3.0 Data Quality Assurance Review

The general QA objectives for this project were to develop and implement procedures for obtaining, evaluating, and confirming the usability of data of a specified quality. To collect such information, analytical data must have an appropriate degree of accuracy and reproducibility, samples collected must be representative of actual field conditions, and samples must be collected and analyzed using unbroken chain of custody procedures.

Reporting limits and analytical results were compared to cleanup and screening levels for each parameter in the matrix of concern. Precision, accuracy, completeness, and comparability parameters used to indicate data quality are discussed below.

3.1 Reporting Limits

Reporting limits are the lowest concentration an instrument is capable of accurately detecting an analyte. Reporting limits are determined by the laboratory and are based on instrumentation capabilities, the matrix of field samples, sample preparation procedures and EPA suggested reporting limits.

The reporting limits were generally consistent with method standards and were below screening level values when possible; however, dilutions were performed on the groundwater sample collected from wells MW-1, and analyzed for VOCs. Some reporting limits were above risk-based screening levels. Several analytes were identified by the laboratory at concentrations that were between the laboratory reporting limit (RL) and

the method detection limit (MDL). These concentrations are estimated values and have been 'J' flagged accordingly.

3.2 Holding Times and Sample Receipt

The holding time is the minimum amount of time the sample can be stored before analytes start to degrade and are not representative of initial sampling concentrations. Holding times are defined by analytical methods. Samples were analyzed within the method specified holding time.

The integrity of the samples received by the laboratory was documented by the Pace Analytical *Sample Receipt Checklist* or *Cooler Receipt Form,* which ensures that samples are representative of the field and were not compromised during shipment. The water containers were received by the analytical laboratory on ice below 6ºC; all containers were intact and unbroken. The chain of custody documents followed an unbroken procedure and were relinquished by the Apex Companies sampler and received by the analytical laboratory as indicated by signatures. The sample ID, collection time, and requested analyses were all clearly and properly filled in by the Apex Companies sampler.

3.3 Method Blanks

A method – or laboratory – blank is a sample prepared in the laboratory along with the actual samples and analyzed for the same parameters at the same time. It is used to assess if detected compounds may have been the result of contamination or background levels in the laboratory. Ethanol was detected in the method blank. Ethanol is not a target COC, but detected concentrations should be considered estimates.

3.4 Accuracy

Accuracy is assessed through the comparison of analytes of known concentration to concentrations determined analytically. A percent recovery is calculated from the analytical concentration to the known concentration of analyte, which must be within control limits established by methods. If the percent recovery is outside of control limits, then data might be compromised. The analytical laboratory will provide quality control samples and surrogates to help determine the accuracy of the data provided. These quality control samples and surrogates are discussed below.

3.4.1 Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control duplicate samples (LCSD) were analyzed by the laboratory to assess the accuracy of the analytical methods. One set of LCS and LCSDs were analyzed per analytical batch. The samples were prepared from an analyte-free matrix that is then spiked with known levels of constituents of interest (COI; i.e. a standard). The concentrations were measured, and the results compared to the known spiked levels. This comparison is expressed as percent recovery. Constituents were within recovery limits.

3.4.2 Matrix Samples

A matrix spike QC sample is used to assess the performance of the analytical method by determining potential matrix interferences. Matrix spike (MS) and matrix spike duplicate (MSD) analyses are performed on one environmental sample per analytical batch. A matrix spike sample uses an environmental sample that is spiked with known concentrations of analytes of interest. The matrix spike is then prepared and analyzed with the same analytical procedures as environmental samples in the analytical batch. The resulting concentration of the matrix spike is then compared to the known – or true – values added to the non-spiked environmental sample concentration. This comparison is expressed as a percent recovery. Matrix spike samples were within laboratory control limits.

3.4.3 Surrogates

Surrogates are organic compounds that are similar in chemical composition to the analytes of interest but are not likely to be found in the environment. They are spiked into environmental and batch QC samples prior to sample preparation and analysis. Surrogate recoveries for environmental samples are used to evaluate matrix interference and sample preparation and analysis efficiency on a sample-specific basis. Surrogates were recovered within control limits.

3.4.4 Instrument Calibration and Reported Results

The continuing calibration standard responded outside of quality control limits for multiple analytes in wells MW-1, MW-2, MW-2i, MW-3, MW-4, MW-5, MW-6, MW-6i, MW-7. The results for these analytes should be considered estimated with a low bias. These analytes are not shown in the report tables and are therefore not flagged.

3.5 Precision

Precision is measured by how close concentrations of duplicate analyses are to each other. These duplicate analyses are of separate aliquots of the same sample that are prepared or analyzed at the same (or similar) time. Precision in the field ensures that samples taken are representative of field concentrations. Field precision is demonstrated by field duplicates. Analytical precision is measured by the laboratory through duplicate analysis of samples and quality control samples. Precision is estimated by the relative percent difference (RPD) between the original analysis and the duplicate analysis.

3.5.1 Laboratory Control Samples

LCSD analyte concentrations were compared to LCS analyte concentrations to assess the precision of the analytical method. This comparison can be expressed by the relative percent difference (RPD) between the LCS and LCSD samples. All RPDs were within control limits.

3.5.2 Matrix Spike Duplicate

Similar to the LCS/LCSD, the analytical batch MS/MSD analyte concentrations are also compared to each other and expressed as an RPD. RPD values were within control limits.

3.5.3 Field Duplicate

A field duplicate is a second field sample collected from a selected sample location. Field duplicate samples serve as a check on laboratory precision and sampling quality, as well as potential variability of the sample matrix. The field duplicate is analyzed and compared to the original sample to assess precision. This comparison can be expressed by the RPD between the original and duplicate samples. Only detections greater than the reporting limit are controlled and used for quality control purposes. RPDs were within quality control limits for the field duplicate sample.

4.0 Conclusion

In conclusion, the QA objectives have been met and the data are of sufficient quality for use in this project.

ANALYTICAL REPORT

September 06, 2023

Oregon Dept. of Env. Quality - ODEQ

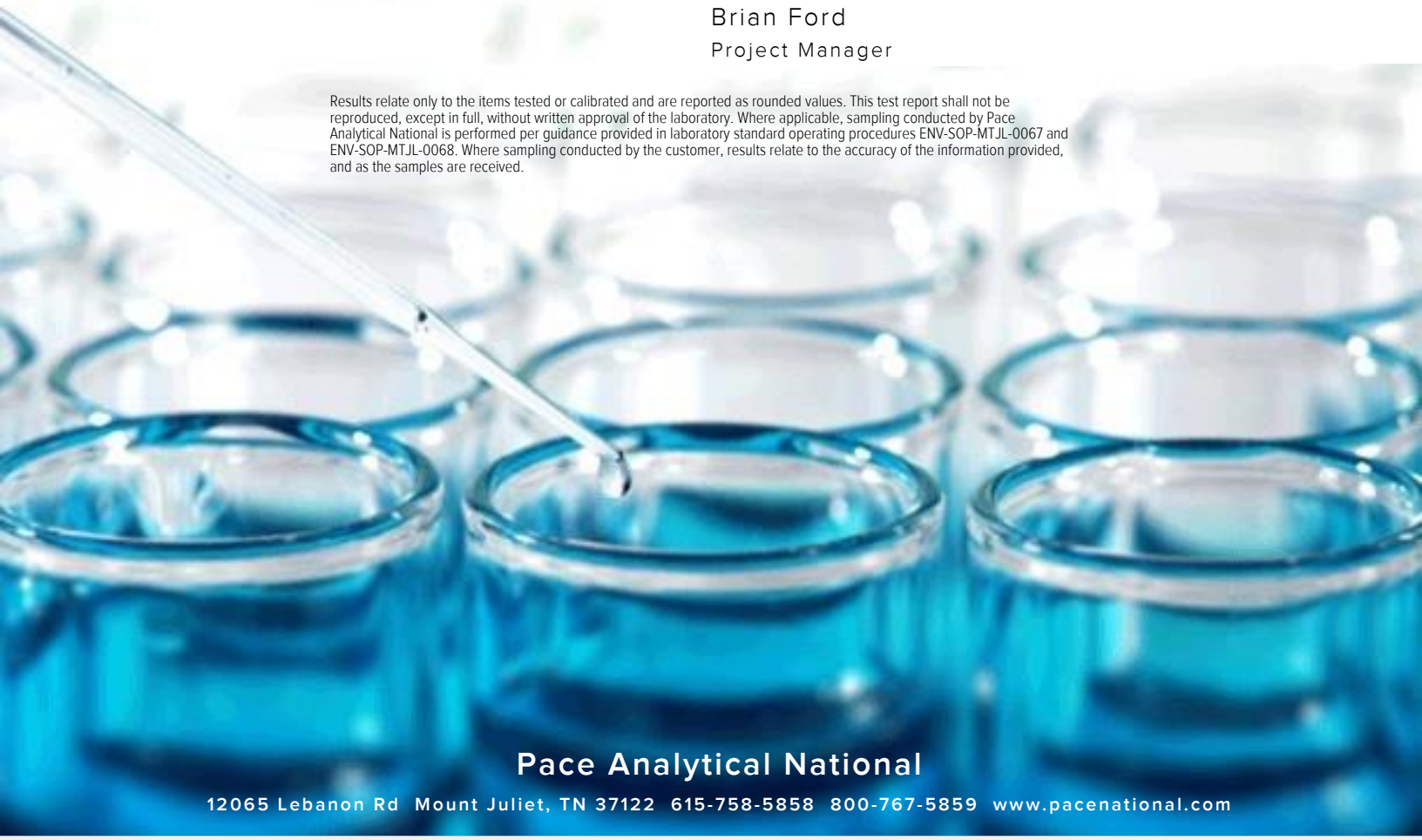
Sample Delivery Group:	L1651174
Samples Received:	08/30/2023
Project Number:	2326-01
Description:	Tigard Dry Cleaners
Report To:	Mark Pugh

Entire Report Reviewed By:

Brian Ford

Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

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

TABLE OF CONTENTS

KEPLERS L1651174-01 Air

Collected by	Collected date/time	Received date/time
	08/28/23 00:00	08/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2125213	1	09/01/23 12:30	09/01/23 12:30	DAH	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG2125820	4	09/02/23 15:15	09/02/23 15:15	GH	Mt. Juliet, TN

AMB-OUTSIDE L1651174-02 Air

Collected by	Collected date/time	Received date/time
	08/28/23 00:00	08/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2125213	1	09/01/23 12:58	09/01/23 12:58	DAH	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG2125820	1	09/02/23 14:38	09/02/23 14:38	GH	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	162	385	E	1	WG2125213
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG2125213
Benzene	71-43-2	78.10	0.200	0.639	0.272	0.869		1	WG2125213
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG2125213
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG2125213
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG2125213
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG2125213
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG2125213
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG2125213
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG2125213
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG2125213
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG2125213
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG2125213
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG2125213
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG2125213
Cyclohexane	110-82-7	84.20	0.200	0.689	0.638	2.20		1	WG2125213
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG2125213
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG2125213
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG2125213
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG2125213
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG2125213
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG2125213
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG2125213
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG2125213
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG2125213
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG2125213
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG2125213
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG2125213
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG2125213
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG2125213
Ethanol	64-17-5	46.10	2.50	4.71	19.1	36.0		1	WG2125213
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG2125213
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG2125213
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	ND	ND		1	WG2125213
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.354	1.75		1	WG2125213
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG2125213
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG2125213
Heptane	142-82-5	100	0.800	3.27	214	875		4	WG2125820
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG2125213
n-Hexane	110-54-3	86.20	0.630	2.22	48.1	170		1	WG2125213
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG2125213
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG2125213
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG2125213
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	3.84	11.3		1	WG2125213
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG2125213
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG2125213
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG2125213
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG2125213
2-Propanol	67-63-0	60.10	1.25	3.07	39.8	97.8		1	WG2125213
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG2125213
n-Propylbenzene	103-65-1	120	0.200	0.982	ND	ND		1	WG2125213
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG2125213
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG2125213
Tetrachloroethylene	127-18-4	166	0.800	5.43	ND	ND		4	WG2125820
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG2125213
Toluene	108-88-3	92.10	0.500	1.88	49.7	187		1	WG2125213

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

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG2125213
1,1,1-Trichloroethane	71-55-6	133	0.200	1.09	ND	ND		1	WG2125213
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG2125213
Trichloroethylene	79-01-6	131	0.200	1.07	18.8	101		1	WG2125213
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG2125213
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG2125213
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG2125213
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG2125213
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG2125213
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG2125213
m&p-Xylene	1330-20-7	106	0.400	1.73	0.400	1.73		1	WG2125213
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG2125213
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	594	2450		1	WG2125213
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*92.4*				WG2125213
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*99.4*				WG2125820

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

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	1.25	2.97	5.05	12.0		1	WG2125213
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG2125213
Benzene	71-43-2	78.10	0.200	0.639	0.263	0.840		1	WG2125213
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG2125213
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG2125213
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG2125213
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG2125213
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG2125213
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG2125213
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG2125213
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG2125213
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG2125213
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG2125213
Chloromethane	74-87-3	50.50	0.200	0.413	0.431	0.890		1	WG2125213
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG2125213
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG2125213
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG2125213
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG2125213
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG2125213
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG2125213
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG2125213
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG2125213
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG2125213
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG2125213
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	0.334	1.32		1	WG2125213
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG2125213
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG2125213
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG2125213
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG2125213
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG2125213
Ethanol	64-17-5	46.10	2.50	4.71	10.7	20.2		1	WG2125213
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG2125213
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG2125213
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	ND	ND		1	WG2125213
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.383	1.89		1	WG2125213
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG2125213
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG2125213
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG2125820
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG2125213
n-Hexane	110-54-3	86.20	0.630	2.22	ND	ND		1	WG2125213
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG2125213
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG2125213
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG2125213
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG2125213
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG2125213
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG2125213
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG2125213
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG2125213
2-Propanol	67-63-0	60.10	1.25	3.07	ND	ND		1	WG2125213
Propene	115-07-1	42.10	1.25	2.15	ND	ND		1	WG2125213
n-Propylbenzene	103-65-1	120	0.200	0.982	ND	ND		1	WG2125213
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG2125213
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG2125213
Tetrachloroethylene	127-18-4	166	0.200	1.36	1.43	9.71		1	WG2125213
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG2125213
Toluene	108-88-3	92.10	0.500	1.88	ND	ND		1	WG2125213

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

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG2125213
1,1,1-Trichloroethane	71-55-6	133	0.200	1.09	ND	ND		1	WG2125213
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG2125213
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG2125213
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG2125213
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG2125213
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG2125213
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG2125213
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG2125213
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG2125213
m&p-Xylene	1330-20-7	106	0.400	1.73	ND	ND		1	WG2125213
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG2125213
TPH (GC/MS) Low Fraction	8006-61-9	101	200	826	ND	ND		1	WG2125213
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*93.1*				WG2125213
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*98.5*				WG2125820

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

Method Blank (MB)

(MB) R3968583-3 09/01/23 09:37

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	0.738	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
Hexachloro-1,3-butadiene	U		0.105	0.630
n-Hexane	U		0.206	0.630
Isopropylbenzene	U		0.0777	0.200

Method Blank (MB)

(MB) R3968583-3 09/01/23 09:37

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Methylene Chloride	U		0.0979	0.200
Methyl Butyl Ketone	U		0.133	1.25
2-Butanone (MEK)	U		0.0814	1.25
4-Methyl-2-pentanone (MIBK)	U		0.0765	1.25
Methyl methacrylate	U		0.0876	0.200
MTBE	U		0.0647	0.200
Naphthalene	U		0.350	0.630
2-Propanol	U		0.264	1.25
Propene	U		0.0932	1.25
n-Propylbenzene	U		0.0773	0.200
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	*91.7*			*60.0-140*

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

(LCS) R3968583-1 09/01/23 08:38 • (LCSD) R3968583-2 09/01/23 09:10

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	3.55	3.35	94.7	89.3	70.0-130			5.80	25
Allyl chloride	3.75	3.28	3.14	87.5	83.7	70.0-130			4.36	25
Benzene	3.75	4.24	4.00	113	107	70.0-130			5.83	25
Benzyl Chloride	3.75	4.08	4.04	109	108	70.0-152			0.985	25

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

(LCS) R3968583-1 09/01/23 08:38 • (LCSD) R3968583-2 09/01/23 09:10

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	4.22	3.95	113	105	70.0-130			6.61	25
Bromoform	3.75	4.23	4.11	113	110	70.0-130			2.88	25
Bromomethane	3.75	3.47	3.32	92.5	88.5	70.0-130			4.42	25
1,3-Butadiene	3.75	3.22	3.08	85.9	82.1	70.0-130			4.44	25
Carbon disulfide	3.75	3.39	3.23	90.4	86.1	70.0-130			4.83	25
Carbon tetrachloride	3.75	3.91	3.71	104	98.9	70.0-130			5.25	25
Chlorobenzene	3.75	4.25	4.05	113	108	70.0-130			4.82	25
Chloroethane	3.75	3.33	3.18	88.8	84.8	70.0-130			4.61	25
Chloroform	3.75	3.95	3.80	105	101	70.0-130			3.87	25
Chloromethane	3.75	3.37	3.21	89.9	85.6	70.0-130			4.86	25
2-Chlorotoluene	3.75	4.15	4.13	111	110	70.0-130			0.483	25
Cyclohexane	3.75	3.80	3.70	101	98.7	70.0-130			2.67	25
Dibromochloromethane	3.75	4.36	4.07	116	109	70.0-130			6.88	25
1,2-Dibromoethane	3.75	4.34	4.09	116	109	70.0-130			5.93	25
1,2-Dichlorobenzene	3.75	4.52	4.49	121	120	70.0-130			0.666	25
1,3-Dichlorobenzene	3.75	4.42	4.44	118	118	70.0-130			0.451	25
1,4-Dichlorobenzene	3.75	4.49	4.44	120	118	70.0-130			1.12	25
1,2-Dichloroethane	3.75	4.14	3.89	110	104	70.0-130			6.23	25
1,1-Dichloroethane	3.75	3.88	3.75	103	100	70.0-130			3.41	25
1,1-Dichloroethene	3.75	3.32	3.17	88.5	84.5	70.0-130			4.62	25
cis-1,2-Dichloroethene	3.75	3.82	3.70	102	98.7	70.0-130			3.19	25
trans-1,2-Dichloroethene	3.75	3.84	3.69	102	98.4	70.0-130			3.98	25
1,2-Dichloropropane	3.75	4.24	3.98	113	106	70.0-130			6.33	25
cis-1,3-Dichloropropene	3.75	4.33	3.97	115	106	70.0-130			8.67	25
trans-1,3-Dichloropropene	3.75	4.08	3.91	109	104	70.0-130			4.26	25
1,4-Dioxane	3.75	4.05	3.81	108	102	70.0-140			6.11	25
Ethanol	3.75	3.99	3.76	106	100	55.0-148			5.94	25
Ethylbenzene	3.75	4.03	4.03	107	107	70.0-130			0.000	25
4-Ethyltoluene	3.75	4.39	4.37	117	117	70.0-130			0.457	25
Trichlorofluoromethane	3.75	3.29	3.17	87.7	84.5	70.0-130			3.72	25
Dichlorodifluoromethane	3.75	3.33	3.19	88.8	85.1	64.0-139			4.29	25
1,1,2-Trichlorotrifluoroethane	3.75	3.39	3.31	90.4	88.3	70.0-130			2.39	25
1,2-Dichlorotetrafluoroethane	3.75	3.35	3.24	89.3	86.4	70.0-130			3.34	25
Hexachloro-1,3-butadiene	3.75	4.46	4.41	119	118	70.0-151			1.13	25
n-Hexane	3.75	3.73	3.62	99.5	96.5	70.0-130			2.99	25
Isopropylbenzene	3.75	4.21	4.18	112	111	70.0-130			0.715	25
Methylene Chloride	3.75	3.25	3.15	86.7	84.0	70.0-130			3.12	25
Methyl Butyl Ketone	3.75	3.79	3.56	101	94.9	70.0-149			6.26	25
2-Butanone (MEK)	3.75	4.02	3.84	107	102	70.0-130			4.58	25
4-Methyl-2-pentanone (MIBK)	3.75	4.00	3.77	107	101	70.0-139			5.92	25

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

(LCS) R3968583-1 09/01/23 08:38 • (LCSD) R3968583-2 09/01/23 09:10

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Methyl methacrylate	3.75	4.04	3.83	108	102	70.0-130			5.34	25
MTBE	3.75	3.73	3.62	99.5	96.5	70.0-130			2.99	25
Naphthalene	3.75	4.24	4.26	113	114	70.0-159			0.471	25
2-Propanol	3.75	3.46	3.31	92.3	88.3	70.0-139			4.43	25
Propene	3.75	3.47	3.36	92.5	89.6	64.0-144			3.22	25
n-Propylbenzene	3.75	4.32	4.27	115	114	70.0-130			1.16	25
Styrene	3.75	4.15	4.08	111	109	70.0-130			1.70	25
1,1,2,2-Tetrachloroethane	3.75	4.27	4.23	114	113	70.0-130			0.941	25
Tetrachloroethylene	3.75	4.45	4.22	119	113	70.0-130			5.31	25
Tetrahydrofuran	3.75	3.56	3.42	94.9	91.2	70.0-137			4.01	25
Toluene	3.75	4.16	4.01	111	107	70.0-130			3.67	25
1,2,4-Trichlorobenzene	3.75	4.20	4.24	112	113	70.0-160			0.948	25
1,1,1-Trichloroethane	3.75	3.85	3.74	103	99.7	70.0-130			2.90	25
1,1,2-Trichloroethane	3.75	4.33	4.10	115	109	70.0-130			5.46	25
Trichloroethylene	3.75	4.31	4.03	115	107	70.0-130			6.71	25
1,2,4-Trimethylbenzene	3.75	4.37	4.38	117	117	70.0-130			0.229	25
1,3,5-Trimethylbenzene	3.75	4.41	4.36	118	116	70.0-130			1.14	25
2,2,4-Trimethylpentane	3.75	3.79	3.65	101	97.3	70.0-130			3.76	25
Vinyl chloride	3.75	3.40	3.26	90.7	86.9	70.0-130			4.20	25
Vinyl Bromide	3.75	3.44	3.28	91.7	87.5	70.0-130			4.76	25
Vinyl acetate	3.75	3.14	2.99	83.7	79.7	70.0-130			4.89	25
m&p-Xylene	7.50	8.48	8.35	113	111	70.0-130			1.54	25
o-Xylene	3.75	4.36	4.32	116	115	70.0-130			0.922	25
TPH (GC/MS) Low Fraction	188	175	169	93.1	89.9	70.0-130			3.49	25
(S) 1,4-Bromofluorobenzene				*102*	*102*	*60.0-140*				

Method Blank (MB)

(MB) R3969391-2 09/02/23 11:49

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Heptane	U		0.104	0.200
Tetrachloroethylene	U		0.0814	0.200
(S) 1,4-Bromofluorobenzene	*97.8*			*60.0-140*

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

(LCS) R3969391-1 09/02/23 11:12 • (LCSD) R3969391-3 09/02/23 12:34

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Heptane	3.75	3.44	3.55	91.7	94.7	70.0-130			3.15	25
Tetrachloroethylene	3.75	3.38	3.41	90.1	90.9	70.0-130			0.884	25
(S) 1,4-Bromofluorobenzene				*98.1*	*98.8*	*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.

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.

Agency, Authorized Purchaser or Agent: Oregon DEQ	Contract Laboratory Name: Pace National	Lab Selection Criteria:	Turn Around Time:
Send Lab Report To: Mark Pugh Address: Department of Environmental Quality 700 NE Multnomah St, Suite 600 Portland, OR 97232 E-mail: pugh.mark@deq.state.or.us	Lab Batch #: **Invoice To:** ODEQ/Business Office Address: 700 NE Multnomah Street, Suite 600 Portland, OR. 97232 Tel. #: (800) 452-4011	☐ Proximity (if TAT < 48 hrs) ☐ Prior work on same project ☒ Cost (for anticipated analyses) ☐ Other labs disqualified or unable to perform requested services ☐ Emergency work	☒ 10 days (std.) ☐ 5 days ☐ 72 hours ☐ 48 hours ☐ 24 hours ☐ Other

Project Name: **Tigard Cleaners**
Project #: **2326-01**

Sample Preservative

HCl	NONE	NONE								

J228

Requested Analyses

Sample ID#	Collection Date/Time	Matrix	Number of Containers	VOCs by 8260B	Methane, Ethane and Ethene	TO-15								Comments
Keplers	8/28/23-271-0.05	A	1			X								L165 1174.01
AMB-OUTSIDE	8/28/23-29.51-25	A	1			X								or

Sample Receipt Checklist
COC Seal Present/Intact: __Y X N
COC Signed/Accurate: X Y __N
Bottles arrive intact: X Y __N
Correct bottles used: X Y __N
Sufficeient volume sent: X Y __N
RA Screen <0.5 mR/hr: X Y __N

If Applicable
VOA Zero Headspace: __Y __N
Pres. Correct/Check: __Y __N

Notes: Report Results to: MStevens@apexcos.com;Carmen.Owens@apexcos.com; pugh.mark@deq.state.or.us

Relinquished By: Alex Evernden	Agency/Agent: Apex Companies	Received By: Elizabeth Peters	Agency: Pace
Signature:	Time & Date: 8/28/23 1030	Signature: elizabeth peters	Time & Date: 0900 8/30/23
Relinquished By:	Agency/Agent:	Received By:	Agency/Agent:
Signature:	Time & Date:	Signature:	Time & Date:

THIS PURCHASE IS SUBMITTED PURSUANT TO STATE OF OREGON SOLICITATION #**102-1098-07** AND PRICE AGREEMENT # **8903**. THE PRICE AGREEMENT INCLUDING CONTRACT TERMS AND CONDITIONS AND SPECIAL CONTRACT TERMS AND CONDITIONS (T'S &C'S) CONTAINED IN THE PRICE AGREEMENT ARE HEREBY INCORPORATED BY REFERENCE AND SHALL APPLY TO THIS PURCHASE AND SHALL TAKE PRECEDENCE OVER ALL OTHER CONFLICTING T'S AND C'S, EXPRESS OR IMPLIED.

ANALYTICAL REPORT

September 14, 2023

Oregon Dept. of Env. Quality - ODEQ

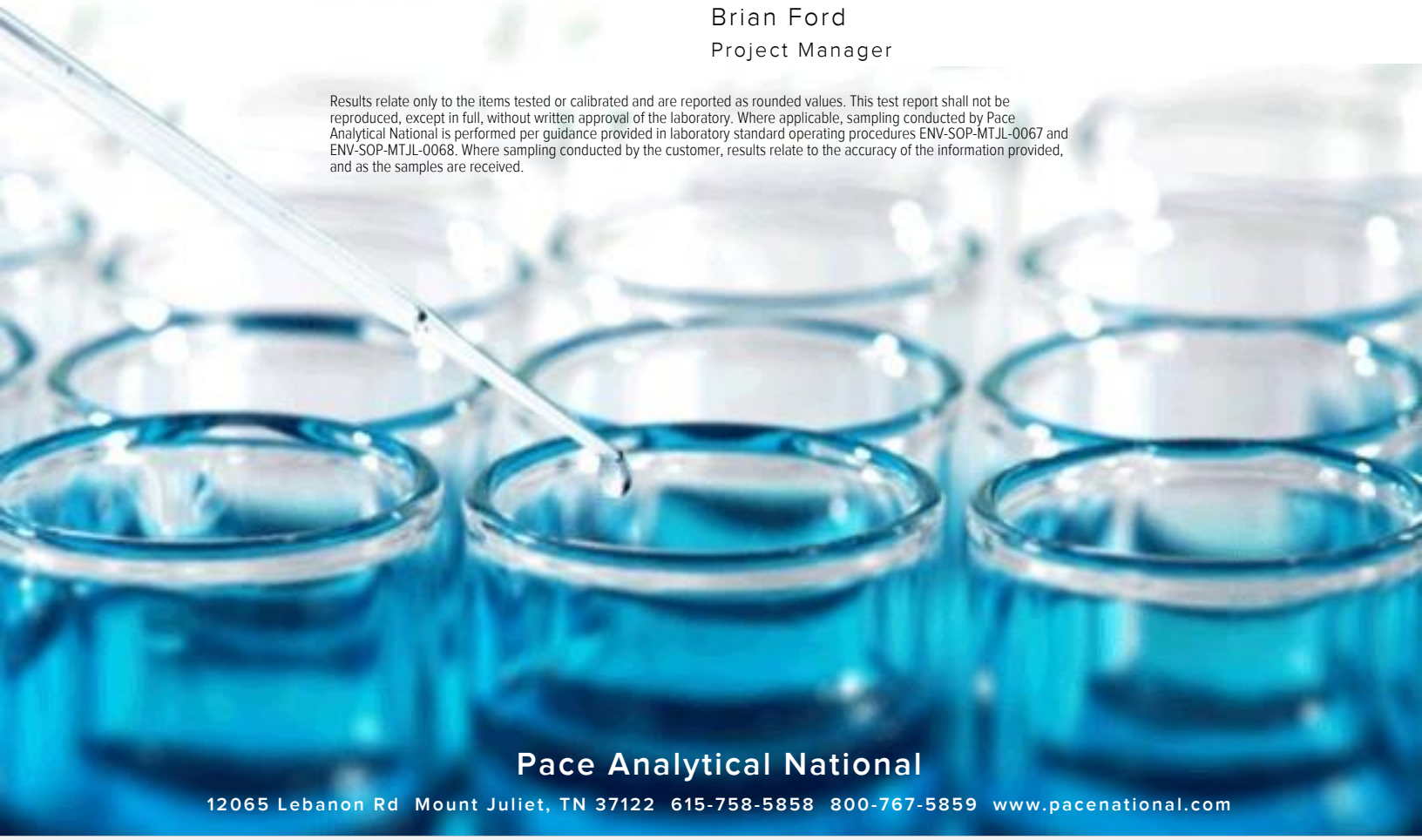
Sample Delivery Group:	L1651306
Samples Received:	08/30/2023
Project Number:	2326-01
Description:	Tigard Dry Cleaners
Report To:	Mark Pugh

Entire Report Reviewed By:

Brian Ford

Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

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

TABLE OF CONTENTS

MW-1 L1651306-01 GW

Collected by | Collected date/time 08/28/23 17:35 | Received date/time 08/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9060A	WG2126858	1	09/11/23 22:32	09/11/23 22:32	AW	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2125024	20000	09/01/23 09:56	09/01/23 09:56	TJJ	Mt. Juliet, TN

MW-2 L1651306-02 GW

Collected by | Collected date/time 08/28/23 12:21 | Received date/time 08/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9060A	WG2126858	2	09/12/23 10:23	09/12/23 10:23	AW	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2125024	1	09/01/23 04:16	09/01/23 04:16	TJJ	Mt. Juliet, TN

MW-2I L1651306-03 GW

Collected by | Collected date/time 08/28/23 15:52 | Received date/time 08/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2125024	500	09/01/23 10:18	09/01/23 10:18	TJJ	Mt. Juliet, TN

MW-3 L1651306-04 GW

Collected by | Collected date/time 08/28/23 11:20 | Received date/time 08/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2125024	100	09/01/23 10:39	09/01/23 10:39	JBE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2127620	5	09/07/23 05:15	09/07/23 05:15	JBE	Mt. Juliet, TN

MW-4 L1651306-05 GW

Collected by | Collected date/time 08/28/23 13:14 | Received date/time 08/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9060A	WG2126859	2	09/14/23 04:33	09/14/23 04:33	SJF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2125232	2000	09/01/23 16:30	09/01/23 16:30	DYW	Mt. Juliet, TN

MW-5 L1651306-06 GW

Collected by | Collected date/time 08/28/23 14:13 | Received date/time 08/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9060A	WG2126859	1	09/13/23 18:14	09/13/23 18:14	SJF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2125024	1	09/01/23 04:37	09/01/23 04:37	TJJ	Mt. Juliet, TN

MW-6 L1651306-07 GW

Collected by | Collected date/time 08/28/23 18:18 | Received date/time 08/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9060A	WG2126859	1	09/13/23 18:35	09/13/23 18:35	SJF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2125232	25	09/01/23 16:52	09/01/23 16:52	DYW	Mt. Juliet, TN

MW-6I L1651306-08 GW

Collected by	Collected date/time	Received date/time
	08/28/23 18:53	08/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2125024	1	09/01/23 04:58	09/01/23 04:58	TJJ	Mt. Juliet, TN

MW-7 L1651306-09 GW

Collected by	Collected date/time	Received date/time
	08/28/23 16:42	08/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2127620	1	09/06/23 21:18	09/06/23 21:18	JBE	Mt. Juliet, TN

DUP-1 L1651306-10 GW

Collected by	Collected date/time	Received date/time
	08/28/23 13:14	08/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2125232	100	09/01/23 17:31	09/01/23 17:31	DYW	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2127620	5000	09/06/23 23:53	09/06/23 23:53	JBE	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

Sample Delivery Group (SDG) Narrative

pH outside of method requirement.

Lab Sample ID	Project Sample ID	Method
L1651306-09	MW-7	8260D

Wet Chemistry by Method 9060A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
TOC (Total Organic Carbon)	31600		102	1000	1	09/11/2023 22:32	WG2126858

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		226000	1000000	20000	09/01/2023 09:56	WG2125024
Acrolein	U	C3	50800	1000000	20000	09/01/2023 09:56	WG2125024
Acrylonitrile	U		13400	200000	20000	09/01/2023 09:56	WG2125024
Benzene	U		1880	20000	20000	09/01/2023 09:56	WG2125024
Bromobenzene	U		2360	20000	20000	09/01/2023 09:56	WG2125024
Bromodichloromethane	U		2720	20000	20000	09/01/2023 09:56	WG2125024
Bromoform	U		2580	20000	20000	09/01/2023 09:56	WG2125024
Bromomethane	U		12100	100000	20000	09/01/2023 09:56	WG2125024
n-Butylbenzene	U		3140	20000	20000	09/01/2023 09:56	WG2125024
sec-Butylbenzene	U		2500	20000	20000	09/01/2023 09:56	WG2125024
tert-Butylbenzene	U		2540	20000	20000	09/01/2023 09:56	WG2125024
Carbon disulfide	U		1920	20000	20000	09/01/2023 09:56	WG2125024
Carbon tetrachloride	U		2560	20000	20000	09/01/2023 09:56	WG2125024
Chlorobenzene	U		2320	20000	20000	09/01/2023 09:56	WG2125024
Chlorodibromomethane	U		2800	20000	20000	09/01/2023 09:56	WG2125024
Chloroethane	U		3840	100000	20000	09/01/2023 09:56	WG2125024
Chloroform	U		2220	100000	20000	09/01/2023 09:56	WG2125024
Chloromethane	U		19200	50000	20000	09/01/2023 09:56	WG2125024
2-Chlorotoluene	U		2120	20000	20000	09/01/2023 09:56	WG2125024
4-Chlorotoluene	U		2280	20000	20000	09/01/2023 09:56	WG2125024
1,2-Dibromo-3-Chloropropane	U	C3	5520	100000	20000	09/01/2023 09:56	WG2125024
1,2-Dibromoethane	U		2520	20000	20000	09/01/2023 09:56	WG2125024
Dibromomethane	U		2440	20000	20000	09/01/2023 09:56	WG2125024
1,2-Dichlorobenzene	U		2140	20000	20000	09/01/2023 09:56	WG2125024
1,3-Dichlorobenzene	U		2200	20000	20000	09/01/2023 09:56	WG2125024
1,4-Dichlorobenzene	U		2400	20000	20000	09/01/2023 09:56	WG2125024
Dichlorodifluoromethane	U		7480	100000	20000	09/01/2023 09:56	WG2125024
1,1-Dichloroethane	U		2000	20000	20000	09/01/2023 09:56	WG2125024
1,2-Dichloroethane	U		1640	20000	20000	09/01/2023 09:56	WG2125024
1,1-Dichloroethene	U		3760	20000	20000	09/01/2023 09:56	WG2125024
cis-1,2-Dichloroethene	441000		2520	20000	20000	09/01/2023 09:56	WG2125024
trans-1,2-Dichloroethene	U		2980	20000	20000	09/01/2023 09:56	WG2125024
1,2-Dichloropropane	U		2980	20000	20000	09/01/2023 09:56	WG2125024
1,1-Dichloropropene	U		2840	20000	20000	09/01/2023 09:56	WG2125024
1,3-Dichloropropane	U		2200	20000	20000	09/01/2023 09:56	WG2125024
cis-1,3-Dichloropropene	U		2220	20000	20000	09/01/2023 09:56	WG2125024
trans-1,3-Dichloropropene	U		2360	20000	20000	09/01/2023 09:56	WG2125024
2,2-Dichloropropane	U		3220	20000	20000	09/01/2023 09:56	WG2125024
Di-isopropyl ether	U		2100	20000	20000	09/01/2023 09:56	WG2125024
Ethylbenzene	U		2740	20000	20000	09/01/2023 09:56	WG2125024
Hexachloro-1,3-butadiene	U	C3	6740	20000	20000	09/01/2023 09:56	WG2125024
Isopropylbenzene	U		2100	20000	20000	09/01/2023 09:56	WG2125024
p-Isopropyltoluene	U		2400	20000	20000	09/01/2023 09:56	WG2125024
2-Butanone (MEK)	U		23800	200000	20000	09/01/2023 09:56	WG2125024
Methylene Chloride	U		8600	100000	20000	09/01/2023 09:56	WG2125024
4-Methyl-2-pentanone (MIBK)	U		9560	200000	20000	09/01/2023 09:56	WG2125024
Methyl tert-butyl ether	U		2020	20000	20000	09/01/2023 09:56	WG2125024
Naphthalene	U	C3	20000	100000	20000	09/01/2023 09:56	WG2125024
n-Propylbenzene	U		1990	20000	20000	09/01/2023 09:56	WG2125024
Styrene	U		2360	20000	20000	09/01/2023 09:56	WG2125024

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
1,1,1,2-Tetrachloroethane	U		2940	20000	20000	09/01/2023 09:56	WG2125024
1,1,2,2-Tetrachloroethane	U		2660	20000	20000	09/01/2023 09:56	WG2125024
1,1,2-Trichlorotrifluoroethane	U		3600	20000	20000	09/01/2023 09:56	WG2125024
Tetrachloroethene	19200	J	6000	20000	20000	09/01/2023 09:56	WG2125024
Toluene	U		5560	20000	20000	09/01/2023 09:56	WG2125024
1,2,3-Trichlorobenzene	U	C3	4600	20000	20000	09/01/2023 09:56	WG2125024
1,2,4-Trichlorobenzene	U		9620	20000	20000	09/01/2023 09:56	WG2125024
1,1,1-Trichloroethane	U		2980	20000	20000	09/01/2023 09:56	WG2125024
1,1,2-Trichloroethane	U		3160	20000	20000	09/01/2023 09:56	WG2125024
Trichloroethene	U		3800	20000	20000	09/01/2023 09:56	WG2125024
Trichlorofluoromethane	U		3200	100000	20000	09/01/2023 09:56	WG2125024
1,2,3-Trichloropropane	U		4740	50000	20000	09/01/2023 09:56	WG2125024
1,2,4-Trimethylbenzene	U		6440	20000	20000	09/01/2023 09:56	WG2125024
1,2,3-Trimethylbenzene	U		2080	20000	20000	09/01/2023 09:56	WG2125024
1,3,5-Trimethylbenzene	U		2080	20000	20000	09/01/2023 09:56	WG2125024
Vinyl chloride	U		4680	20000	20000	09/01/2023 09:56	WG2125024
Xylenes, Total	U		3480	60000	20000	09/01/2023 09:56	WG2125024
(S) Toluene-d8	*106*			*80.0-120*		*09/01/2023 09:56*	WG2125024
(S) 4-Bromofluorobenzene	*98.1*			*77.0-126*		*09/01/2023 09:56*	WG2125024
(S) 1,2-Dichloroethane-d4	*88.5*			*70.0-130*		*09/01/2023 09:56*	WG2125024

Wet Chemistry by Method 9060A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOC (Total Organic Carbon)	46300		204	2000	2	09/12/2023 10:23	WG2126858

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	09/01/2023 04:16	WG2125024
Acrolein	U	C3	2.54	50.0	1	09/01/2023 04:16	WG2125024
Acrylonitrile	U		0.671	10.0	1	09/01/2023 04:16	WG2125024
Benzene	0.243	J	0.0941	1.00	1	09/01/2023 04:16	WG2125024
Bromobenzene	U		0.118	1.00	1	09/01/2023 04:16	WG2125024
Bromodichloromethane	U		0.136	1.00	1	09/01/2023 04:16	WG2125024
Bromoform	U		0.129	1.00	1	09/01/2023 04:16	WG2125024
Bromomethane	U		0.605	5.00	1	09/01/2023 04:16	WG2125024
n-Butylbenzene	U		0.157	1.00	1	09/01/2023 04:16	WG2125024
sec-Butylbenzene	0.489	J	0.125	1.00	1	09/01/2023 04:16	WG2125024
tert-Butylbenzene	U		0.127	1.00	1	09/01/2023 04:16	WG2125024
Carbon disulfide	U		0.0962	1.00	1	09/01/2023 04:16	WG2125024
Carbon tetrachloride	U		0.128	1.00	1	09/01/2023 04:16	WG2125024
Chlorobenzene	U		0.116	1.00	1	09/01/2023 04:16	WG2125024
Chlorodibromomethane	U		0.140	1.00	1	09/01/2023 04:16	WG2125024
Chloroethane	U		0.192	5.00	1	09/01/2023 04:16	WG2125024
Chloroform	U		0.111	5.00	1	09/01/2023 04:16	WG2125024
Chloromethane	U		0.960	2.50	1	09/01/2023 04:16	WG2125024
2-Chlorotoluene	U		0.106	1.00	1	09/01/2023 04:16	WG2125024
4-Chlorotoluene	U		0.114	1.00	1	09/01/2023 04:16	WG2125024
1,2-Dibromo-3-Chloropropane	U	C3	0.276	5.00	1	09/01/2023 04:16	WG2125024
1,2-Dibromoethane	U		0.126	1.00	1	09/01/2023 04:16	WG2125024
Dibromomethane	U		0.122	1.00	1	09/01/2023 04:16	WG2125024
1,2-Dichlorobenzene	U		0.107	1.00	1	09/01/2023 04:16	WG2125024
1,3-Dichlorobenzene	U		0.110	1.00	1	09/01/2023 04:16	WG2125024
1,4-Dichlorobenzene	U		0.120	1.00	1	09/01/2023 04:16	WG2125024
Dichlorodifluoromethane	U		0.374	5.00	1	09/01/2023 04:16	WG2125024
1,1-Dichloroethane	U		0.100	1.00	1	09/01/2023 04:16	WG2125024
1,2-Dichloroethane	U		0.0819	1.00	1	09/01/2023 04:16	WG2125024
1,1-Dichloroethene	U		0.188	1.00	1	09/01/2023 04:16	WG2125024
cis-1,2-Dichloroethene	5.65		0.126	1.00	1	09/01/2023 04:16	WG2125024
trans-1,2-Dichloroethene	U		0.149	1.00	1	09/01/2023 04:16	WG2125024
1,2-Dichloropropane	U		0.149	1.00	1	09/01/2023 04:16	WG2125024
1,1-Dichloropropene	U		0.142	1.00	1	09/01/2023 04:16	WG2125024
1,3-Dichloropropane	U		0.110	1.00	1	09/01/2023 04:16	WG2125024
cis-1,3-Dichloropropene	U		0.111	1.00	1	09/01/2023 04:16	WG2125024
trans-1,3-Dichloropropene	U		0.118	1.00	1	09/01/2023 04:16	WG2125024
2,2-Dichloropropane	U		0.161	1.00	1	09/01/2023 04:16	WG2125024
Di-isopropyl ether	U		0.105	1.00	1	09/01/2023 04:16	WG2125024
Ethylbenzene	0.670	J	0.137	1.00	1	09/01/2023 04:16	WG2125024
Hexachloro-1,3-butadiene	U	C3	0.337	1.00	1	09/01/2023 04:16	WG2125024
Isopropylbenzene	1.03		0.105	1.00	1	09/01/2023 04:16	WG2125024
p-Isopropyltoluene	0.192	J	0.120	1.00	1	09/01/2023 04:16	WG2125024
2-Butanone (MEK)	U		1.19	10.0	1	09/01/2023 04:16	WG2125024
Methylene Chloride	U		0.430	5.00	1	09/01/2023 04:16	WG2125024
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	09/01/2023 04:16	WG2125024
Methyl tert-butyl ether	U		0.101	1.00	1	09/01/2023 04:16	WG2125024
Naphthalene	U	C3	1.00	5.00	1	09/01/2023 04:16	WG2125024
n-Propylbenzene	0.908	J	0.0993	1.00	1	09/01/2023 04:16	WG2125024
Styrene	U		0.118	1.00	1	09/01/2023 04:16	WG2125024

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	09/01/2023 04:16	WG2125024
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	09/01/2023 04:16	WG2125024
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	09/01/2023 04:16	WG2125024
Tetrachloroethene	U		0.300	1.00	1	09/01/2023 04:16	WG2125024
Toluene	1.38		0.278	1.00	1	09/01/2023 04:16	WG2125024
1,2,3-Trichlorobenzene	U	C3	0.230	1.00	1	09/01/2023 04:16	WG2125024
1,2,4-Trichlorobenzene	U		0.481	1.00	1	09/01/2023 04:16	WG2125024
1,1,1-Trichloroethane	U		0.149	1.00	1	09/01/2023 04:16	WG2125024
1,1,2-Trichloroethane	U		0.158	1.00	1	09/01/2023 04:16	WG2125024
Trichloroethene	U		0.190	1.00	1	09/01/2023 04:16	WG2125024
Trichlorofluoromethane	U		0.160	5.00	1	09/01/2023 04:16	WG2125024
1,2,3-Trichloropropane	U		0.237	2.50	1	09/01/2023 04:16	WG2125024
1,2,4-Trimethylbenzene	1.92		0.322	1.00	1	09/01/2023 04:16	WG2125024
1,2,3-Trimethylbenzene	1.24		0.104	1.00	1	09/01/2023 04:16	WG2125024
1,3,5-Trimethylbenzene	0.966	J	0.104	1.00	1	09/01/2023 04:16	WG2125024
Vinyl chloride	12.4		0.234	1.00	1	09/01/2023 04:16	WG2125024
Xylenes, Total	1.04	J	0.174	3.00	1	09/01/2023 04:16	WG2125024
(S) Toluene-d8	*104*			*80.0-120*		*09/01/2023 04:16*	WG2125024
(S) 4-Bromofluorobenzene	*106*			*77.0-126*		*09/01/2023 04:16*	WG2125024
(S) 1,2-Dichloroethane-d4	*87.8*			*70.0-130*		*09/01/2023 04:16*	WG2125024

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		5650	25000	500	09/01/2023 10:18	WG2125024
Acrolein	U	C3	1270	25000	500	09/01/2023 10:18	WG2125024
Acrylonitrile	U		336	5000	500	09/01/2023 10:18	WG2125024
Benzene	U		47.1	500	500	09/01/2023 10:18	WG2125024
Bromobenzene	U		59.0	500	500	09/01/2023 10:18	WG2125024
Bromodichloromethane	U		68.0	500	500	09/01/2023 10:18	WG2125024
Bromoform	U		64.5	500	500	09/01/2023 10:18	WG2125024
Bromomethane	U		303	2500	500	09/01/2023 10:18	WG2125024
n-Butylbenzene	U		78.5	500	500	09/01/2023 10:18	WG2125024
sec-Butylbenzene	U		62.5	500	500	09/01/2023 10:18	WG2125024
tert-Butylbenzene	U		63.5	500	500	09/01/2023 10:18	WG2125024
Carbon disulfide	U		48.1	500	500	09/01/2023 10:18	WG2125024
Carbon tetrachloride	U		64.0	500	500	09/01/2023 10:18	WG2125024
Chlorobenzene	U		58.0	500	500	09/01/2023 10:18	WG2125024
Chlorodibromomethane	U		70.0	500	500	09/01/2023 10:18	WG2125024
Chloroethane	U		96.0	2500	500	09/01/2023 10:18	WG2125024
Chloroform	U		55.5	2500	500	09/01/2023 10:18	WG2125024
Chloromethane	U		480	1250	500	09/01/2023 10:18	WG2125024
2-Chlorotoluene	U		53.0	500	500	09/01/2023 10:18	WG2125024
4-Chlorotoluene	U		57.0	500	500	09/01/2023 10:18	WG2125024
1,2-Dibromo-3-Chloropropane	U	C3	138	2500	500	09/01/2023 10:18	WG2125024
1,2-Dibromoethane	U		63.0	500	500	09/01/2023 10:18	WG2125024
Dibromomethane	U		61.0	500	500	09/01/2023 10:18	WG2125024
1,2-Dichlorobenzene	U		53.5	500	500	09/01/2023 10:18	WG2125024
1,3-Dichlorobenzene	U		55.0	500	500	09/01/2023 10:18	WG2125024
1,4-Dichlorobenzene	U		60.0	500	500	09/01/2023 10:18	WG2125024
Dichlorodifluoromethane	U		187	2500	500	09/01/2023 10:18	WG2125024
1,1-Dichloroethane	U		50.0	500	500	09/01/2023 10:18	WG2125024
1,2-Dichloroethane	U		40.9	500	500	09/01/2023 10:18	WG2125024
1,1-Dichloroethene	U		94.0	500	500	09/01/2023 10:18	WG2125024
cis-1,2-Dichloroethene	16900		63.0	500	500	09/01/2023 10:18	WG2125024
trans-1,2-Dichloroethene	U		74.5	500	500	09/01/2023 10:18	WG2125024
1,2-Dichloropropane	U		74.5	500	500	09/01/2023 10:18	WG2125024
1,1-Dichloropropene	U		71.0	500	500	09/01/2023 10:18	WG2125024
1,3-Dichloropropane	U		55.0	500	500	09/01/2023 10:18	WG2125024
cis-1,3-Dichloropropene	U		55.5	500	500	09/01/2023 10:18	WG2125024
trans-1,3-Dichloropropene	U		59.0	500	500	09/01/2023 10:18	WG2125024
2,2-Dichloropropane	U		80.5	500	500	09/01/2023 10:18	WG2125024
Di-isopropyl ether	U		52.5	500	500	09/01/2023 10:18	WG2125024
Ethylbenzene	U		68.5	500	500	09/01/2023 10:18	WG2125024
Hexachloro-1,3-butadiene	U	C3	169	500	500	09/01/2023 10:18	WG2125024
Isopropylbenzene	U		52.5	500	500	09/01/2023 10:18	WG2125024
p-Isopropyltoluene	U		60.0	500	500	09/01/2023 10:18	WG2125024
2-Butanone (MEK)	U		595	5000	500	09/01/2023 10:18	WG2125024
Methylene Chloride	U		215	2500	500	09/01/2023 10:18	WG2125024
4-Methyl-2-pentanone (MIBK)	U		239	5000	500	09/01/2023 10:18	WG2125024
Methyl tert-butyl ether	U		50.5	500	500	09/01/2023 10:18	WG2125024
Naphthalene	U	C3	500	2500	500	09/01/2023 10:18	WG2125024
n-Propylbenzene	U		49.7	500	500	09/01/2023 10:18	WG2125024
Styrene	U		59.0	500	500	09/01/2023 10:18	WG2125024
1,1,1,2-Tetrachloroethane	U		73.5	500	500	09/01/2023 10:18	WG2125024
1,1,2,2-Tetrachloroethane	U		66.5	500	500	09/01/2023 10:18	WG2125024
1,1,2-Trichlorotrifluoroethane	U		90.0	500	500	09/01/2023 10:18	WG2125024
Tetrachloroethene	368	J	150	500	500	09/01/2023 10:18	WG2125024
Toluene	U		139	500	500	09/01/2023 10:18	WG2125024
1,2,3-Trichlorobenzene	U	C3	115	500	500	09/01/2023 10:18	WG2125024

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
1,2,4-Trichlorobenzene	U		241	500	500	09/01/2023 10:18	WG2125024
1,1,1-Trichloroethane	U		74.5	500	500	09/01/2023 10:18	WG2125024
1,1,2-Trichloroethane	U		79.0	500	500	09/01/2023 10:18	WG2125024
Trichloroethene	U		95.0	500	500	09/01/2023 10:18	WG2125024
Trichlorofluoromethane	U		80.0	2500	500	09/01/2023 10:18	WG2125024
1,2,3-Trichloropropane	U		119	1250	500	09/01/2023 10:18	WG2125024
1,2,4-Trimethylbenzene	U		161	500	500	09/01/2023 10:18	WG2125024
1,2,3-Trimethylbenzene	U		52.0	500	500	09/01/2023 10:18	WG2125024
1,3,5-Trimethylbenzene	U		52.0	500	500	09/01/2023 10:18	WG2125024
Vinyl chloride	465	J	117	500	500	09/01/2023 10:18	WG2125024
Xylenes, Total	U		87.0	1500	500	09/01/2023 10:18	WG2125024
(S) Toluene-d8	*105*			*80.0-120*		*09/01/2023 10:18*	WG2125024
(S) 4-Bromofluorobenzene	*103*			*77.0-126*		*09/01/2023 10:18*	WG2125024
(S) 1,2-Dichloroethane-d4	*86.5*			*70.0-130*		*09/01/2023 10:18*	WG2125024

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		56.5	250	5	09/07/2023 05:15	WG2127620
Acrolein	U	C3	12.7	250	5	09/07/2023 05:15	WG2127620
Acrylonitrile	U		3.36	50.0	5	09/07/2023 05:15	WG2127620
Benzene	U		0.471	5.00	5	09/07/2023 05:15	WG2127620
Bromobenzene	U		0.590	5.00	5	09/07/2023 05:15	WG2127620
Bromodichloromethane	U		0.680	5.00	5	09/07/2023 05:15	WG2127620
Bromoform	U		0.645	5.00	5	09/07/2023 05:15	WG2127620
Bromomethane	U		3.03	25.0	5	09/07/2023 05:15	WG2127620
n-Butylbenzene	U		0.785	5.00	5	09/07/2023 05:15	WG2127620
sec-Butylbenzene	U		0.625	5.00	5	09/07/2023 05:15	WG2127620
tert-Butylbenzene	U		0.635	5.00	5	09/07/2023 05:15	WG2127620
Carbon disulfide	U		0.481	5.00	5	09/07/2023 05:15	WG2127620
Carbon tetrachloride	U		0.640	5.00	5	09/07/2023 05:15	WG2127620
Chlorobenzene	U		0.580	5.00	5	09/07/2023 05:15	WG2127620
Chlorodibromomethane	U		0.700	5.00	5	09/07/2023 05:15	WG2127620
Chloroethane	U		0.960	25.0	5	09/07/2023 05:15	WG2127620
Chloroform	U		0.555	25.0	5	09/07/2023 05:15	WG2127620
Chloromethane	U	C3	4.80	12.5	5	09/07/2023 05:15	WG2127620
2-Chlorotoluene	U		0.530	5.00	5	09/07/2023 05:15	WG2127620
4-Chlorotoluene	U		0.570	5.00	5	09/07/2023 05:15	WG2127620
1,2-Dibromo-3-Chloropropane	U		1.38	25.0	5	09/07/2023 05:15	WG2127620
1,2-Dibromoethane	U		0.630	5.00	5	09/07/2023 05:15	WG2127620
Dibromomethane	U		0.610	5.00	5	09/07/2023 05:15	WG2127620
1,2-Dichlorobenzene	U		0.535	5.00	5	09/07/2023 05:15	WG2127620
1,3-Dichlorobenzene	U		0.550	5.00	5	09/07/2023 05:15	WG2127620
1,4-Dichlorobenzene	U		0.600	5.00	5	09/07/2023 05:15	WG2127620
Dichlorodifluoromethane	U		1.87	25.0	5	09/07/2023 05:15	WG2127620
1,1-Dichloroethane	U		0.500	5.00	5	09/07/2023 05:15	WG2127620
1,2-Dichloroethane	U		0.409	5.00	5	09/07/2023 05:15	WG2127620
1,1-Dichloroethene	2.94	J	0.940	5.00	5	09/07/2023 05:15	WG2127620
cis-1,2-Dichloroethene	658		12.6	100	100	09/01/2023 10:39	WG2125024
trans-1,2-Dichloroethene	4.68	J	0.745	5.00	5	09/07/2023 05:15	WG2127620
1,2-Dichloropropane	U		0.745	5.00	5	09/07/2023 05:15	WG2127620
1,1-Dichloropropene	U		0.710	5.00	5	09/07/2023 05:15	WG2127620
1,3-Dichloropropane	U		0.550	5.00	5	09/07/2023 05:15	WG2127620
cis-1,3-Dichloropropene	U		0.555	5.00	5	09/07/2023 05:15	WG2127620
trans-1,3-Dichloropropene	U		0.590	5.00	5	09/07/2023 05:15	WG2127620
2,2-Dichloropropane	U		0.805	5.00	5	09/07/2023 05:15	WG2127620
Di-isopropyl ether	U		0.525	5.00	5	09/07/2023 05:15	WG2127620
Ethylbenzene	U		0.685	5.00	5	09/07/2023 05:15	WG2127620
Hexachloro-1,3-butadiene	U		1.69	5.00	5	09/07/2023 05:15	WG2127620
Isopropylbenzene	U		0.525	5.00	5	09/07/2023 05:15	WG2127620
p-Isopropyltoluene	U		0.600	5.00	5	09/07/2023 05:15	WG2127620
2-Butanone (MEK)	U		5.95	50.0	5	09/07/2023 05:15	WG2127620
Methylene Chloride	U		2.15	25.0	5	09/07/2023 05:15	WG2127620
4-Methyl-2-pentanone (MIBK)	U		2.39	50.0	5	09/07/2023 05:15	WG2127620
Methyl tert-butyl ether	128		0.505	5.00	5	09/07/2023 05:15	WG2127620
Naphthalene	U		5.00	25.0	5	09/07/2023 05:15	WG2127620
n-Propylbenzene	U		0.497	5.00	5	09/07/2023 05:15	WG2127620
Styrene	U		0.590	5.00	5	09/07/2023 05:15	WG2127620
1,1,1,2-Tetrachloroethane	U		0.735	5.00	5	09/07/2023 05:15	WG2127620
1,1,2,2-Tetrachloroethane	U		0.665	5.00	5	09/07/2023 05:15	WG2127620
1,1,2-Trichlorotrifluoroethane	U		0.900	5.00	5	09/07/2023 05:15	WG2127620
Tetrachloroethene	73.7		1.50	5.00	5	09/07/2023 05:15	WG2127620
Toluene	U		1.39	5.00	5	09/07/2023 05:15	WG2127620
1,2,3-Trichlorobenzene	U		1.15	5.00	5	09/07/2023 05:15	WG2127620

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
1,2,4-Trichlorobenzene	U		2.41	5.00	5	09/07/2023 05:15	WG2127620
1,1,1-Trichloroethane	U		0.745	5.00	5	09/07/2023 05:15	WG2127620
1,1,2-Trichloroethane	U		0.790	5.00	5	09/07/2023 05:15	WG2127620
Trichloroethene	117		0.950	5.00	5	09/07/2023 05:15	WG2127620
Trichlorofluoromethane	U		0.800	25.0	5	09/07/2023 05:15	WG2127620
1,2,3-Trichloropropane	U		1.19	12.5	5	09/07/2023 05:15	WG2127620
1,2,4-Trimethylbenzene	U		1.61	5.00	5	09/07/2023 05:15	WG2127620
1,2,3-Trimethylbenzene	U		0.520	5.00	5	09/07/2023 05:15	WG2127620
1,3,5-Trimethylbenzene	U		0.520	5.00	5	09/07/2023 05:15	WG2127620
Vinyl chloride	205		1.17	5.00	5	09/07/2023 05:15	WG2127620
Xylenes, Total	U		0.870	15.0	5	09/07/2023 05:15	WG2127620
(S) Toluene-d8	*104*			*80.0-120*		*09/01/2023 10:39*	WG2125024
(S) Toluene-d8	*106*			*80.0-120*		*09/07/2023 05:15*	WG2127620
(S) 4-Bromofluorobenzene	*100*			*77.0-126*		*09/01/2023 10:39*	WG2125024
(S) 4-Bromofluorobenzene	*102*			*77.0-126*		*09/07/2023 05:15*	WG2127620
(S) 1,2-Dichloroethane-d4	*88.4*			*70.0-130*		*09/01/2023 10:39*	WG2125024
(S) 1,2-Dichloroethane-d4	*113*			*70.0-130*		*09/07/2023 05:15*	WG2127620

Wet Chemistry by Method 9060A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
TOC (Total Organic Carbon)	45300		204	2000	2	09/14/2023 04:33	WG2126859

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		22600	100000	2000	09/01/2023 16:30	WG2125232
Acrolein	U		5080	100000	2000	09/01/2023 16:30	WG2125232
Acrylonitrile	U		1340	20000	2000	09/01/2023 16:30	WG2125232
Benzene	U		188	2000	2000	09/01/2023 16:30	WG2125232
Bromobenzene	U		236	2000	2000	09/01/2023 16:30	WG2125232
Bromodichloromethane	U		272	2000	2000	09/01/2023 16:30	WG2125232
Bromoform	U		258	2000	2000	09/01/2023 16:30	WG2125232
Bromomethane	U		1210	10000	2000	09/01/2023 16:30	WG2125232
n-Butylbenzene	U		314	2000	2000	09/01/2023 16:30	WG2125232
sec-Butylbenzene	U		250	2000	2000	09/01/2023 16:30	WG2125232
tert-Butylbenzene	U		254	2000	2000	09/01/2023 16:30	WG2125232
Carbon disulfide	U		192	2000	2000	09/01/2023 16:30	WG2125232
Carbon tetrachloride	U		256	2000	2000	09/01/2023 16:30	WG2125232
Chlorobenzene	U		232	2000	2000	09/01/2023 16:30	WG2125232
Chlorodibromomethane	U		280	2000	2000	09/01/2023 16:30	WG2125232
Chloroethane	U		384	10000	2000	09/01/2023 16:30	WG2125232
Chloroform	U		222	10000	2000	09/01/2023 16:30	WG2125232
Chloromethane	U		1920	5000	2000	09/01/2023 16:30	WG2125232
2-Chlorotoluene	U		212	2000	2000	09/01/2023 16:30	WG2125232
4-Chlorotoluene	U		228	2000	2000	09/01/2023 16:30	WG2125232
1,2-Dibromo-3-Chloropropane	U		552	10000	2000	09/01/2023 16:30	WG2125232
1,2-Dibromoethane	U		252	2000	2000	09/01/2023 16:30	WG2125232
Dibromomethane	U		244	2000	2000	09/01/2023 16:30	WG2125232
1,2-Dichlorobenzene	U		214	2000	2000	09/01/2023 16:30	WG2125232
1,3-Dichlorobenzene	U		220	2000	2000	09/01/2023 16:30	WG2125232
1,4-Dichlorobenzene	U		240	2000	2000	09/01/2023 16:30	WG2125232
Dichlorodifluoromethane	U		748	10000	2000	09/01/2023 16:30	WG2125232
1,1-Dichloroethane	U		200	2000	2000	09/01/2023 16:30	WG2125232
1,2-Dichloroethane	U		164	2000	2000	09/01/2023 16:30	WG2125232
1,1-Dichloroethene	U		376	2000	2000	09/01/2023 16:30	WG2125232
cis-1,2-Dichloroethene	75200		252	2000	2000	09/01/2023 16:30	WG2125232
trans-1,2-Dichloroethene	U		298	2000	2000	09/01/2023 16:30	WG2125232
1,2-Dichloropropane	U		298	2000	2000	09/01/2023 16:30	WG2125232
1,1-Dichloropropene	U		284	2000	2000	09/01/2023 16:30	WG2125232
1,3-Dichloropropane	U		220	2000	2000	09/01/2023 16:30	WG2125232
cis-1,3-Dichloropropene	U		222	2000	2000	09/01/2023 16:30	WG2125232
trans-1,3-Dichloropropene	U		236	2000	2000	09/01/2023 16:30	WG2125232
2,2-Dichloropropane	U		322	2000	2000	09/01/2023 16:30	WG2125232
Di-isopropyl ether	U		210	2000	2000	09/01/2023 16:30	WG2125232
Ethylbenzene	U		274	2000	2000	09/01/2023 16:30	WG2125232
Hexachloro-1,3-butadiene	U		674	2000	2000	09/01/2023 16:30	WG2125232
Isopropylbenzene	U		210	2000	2000	09/01/2023 16:30	WG2125232
p-Isopropyltoluene	U		240	2000	2000	09/01/2023 16:30	WG2125232
2-Butanone (MEK)	U		2380	20000	2000	09/01/2023 16:30	WG2125232
Methylene Chloride	U		860	10000	2000	09/01/2023 16:30	WG2125232
4-Methyl-2-pentanone (MIBK)	U		956	20000	2000	09/01/2023 16:30	WG2125232
Methyl tert-butyl ether	U		202	2000	2000	09/01/2023 16:30	WG2125232
Naphthalene	U		2000	10000	2000	09/01/2023 16:30	WG2125232
n-Propylbenzene	U		199	2000	2000	09/01/2023 16:30	WG2125232
Styrene	U		236	2000	2000	09/01/2023 16:30	WG2125232

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
1,1,1,2-Tetrachloroethane	U		294	2000	2000	09/01/2023 16:30	WG2125232
1,1,2,2-Tetrachloroethane	U		266	2000	2000	09/01/2023 16:30	WG2125232
1,1,2-Trichlorotrifluoroethane	U		360	2000	2000	09/01/2023 16:30	WG2125232
Tetrachloroethene	5050		600	2000	2000	09/01/2023 16:30	WG2125232
Toluene	U		556	2000	2000	09/01/2023 16:30	WG2125232
1,2,3-Trichlorobenzene	U		460	2000	2000	09/01/2023 16:30	WG2125232
1,2,4-Trichlorobenzene	U		962	2000	2000	09/01/2023 16:30	WG2125232
1,1,1-Trichloroethane	U		298	2000	2000	09/01/2023 16:30	WG2125232
1,1,2-Trichloroethane	U		316	2000	2000	09/01/2023 16:30	WG2125232
Trichloroethene	1610	J	380	2000	2000	09/01/2023 16:30	WG2125232
Trichlorofluoromethane	U		320	10000	2000	09/01/2023 16:30	WG2125232
1,2,3-Trichloropropane	U		474	5000	2000	09/01/2023 16:30	WG2125232
1,2,4-Trimethylbenzene	U		644	2000	2000	09/01/2023 16:30	WG2125232
1,2,3-Trimethylbenzene	U		208	2000	2000	09/01/2023 16:30	WG2125232
1,3,5-Trimethylbenzene	U		208	2000	2000	09/01/2023 16:30	WG2125232
Vinyl chloride	26700	C5	468	2000	2000	09/01/2023 16:30	WG2125232
Xylenes, Total	U		348	6000	2000	09/01/2023 16:30	WG2125232
(S) Toluene-d8	*101*			*80.0-120*		*09/01/2023 16:30*	WG2125232
(S) 4-Bromofluorobenzene	*92.4*			*77.0-126*		*09/01/2023 16:30*	WG2125232
(S) 1,2-Dichloroethane-d4	*98.0*			*70.0-130*		*09/01/2023 16:30*	WG2125232

Wet Chemistry by Method 9060A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOC (Total Organic Carbon)	8270		102	1000	1	09/13/2023 18:14	WG2126859

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	09/01/2023 04:37	WG2125024
Acrolein	U	C3	2.54	50.0	1	09/01/2023 04:37	WG2125024
Acrylonitrile	U		0.671	10.0	1	09/01/2023 04:37	WG2125024
Benzene	0.207	J	0.0941	1.00	1	09/01/2023 04:37	WG2125024
Bromobenzene	U		0.118	1.00	1	09/01/2023 04:37	WG2125024
Bromodichloromethane	U		0.136	1.00	1	09/01/2023 04:37	WG2125024
Bromoform	U		0.129	1.00	1	09/01/2023 04:37	WG2125024
Bromomethane	U		0.605	5.00	1	09/01/2023 04:37	WG2125024
n-Butylbenzene	U		0.157	1.00	1	09/01/2023 04:37	WG2125024
sec-Butylbenzene	0.208	J	0.125	1.00	1	09/01/2023 04:37	WG2125024
tert-Butylbenzene	U		0.127	1.00	1	09/01/2023 04:37	WG2125024
Carbon disulfide	U		0.0962	1.00	1	09/01/2023 04:37	WG2125024
Carbon tetrachloride	U		0.128	1.00	1	09/01/2023 04:37	WG2125024
Chlorobenzene	U		0.116	1.00	1	09/01/2023 04:37	WG2125024
Chlorodibromomethane	U		0.140	1.00	1	09/01/2023 04:37	WG2125024
Chloroethane	U		0.192	5.00	1	09/01/2023 04:37	WG2125024
Chloroform	U		0.111	5.00	1	09/01/2023 04:37	WG2125024
Chloromethane	U		0.960	2.50	1	09/01/2023 04:37	WG2125024
2-Chlorotoluene	U		0.106	1.00	1	09/01/2023 04:37	WG2125024
4-Chlorotoluene	U		0.114	1.00	1	09/01/2023 04:37	WG2125024
1,2-Dibromo-3-Chloropropane	U	C3	0.276	5.00	1	09/01/2023 04:37	WG2125024
1,2-Dibromoethane	U		0.126	1.00	1	09/01/2023 04:37	WG2125024
Dibromomethane	U		0.122	1.00	1	09/01/2023 04:37	WG2125024
1,2-Dichlorobenzene	U		0.107	1.00	1	09/01/2023 04:37	WG2125024
1,3-Dichlorobenzene	U		0.110	1.00	1	09/01/2023 04:37	WG2125024
1,4-Dichlorobenzene	U		0.120	1.00	1	09/01/2023 04:37	WG2125024
Dichlorodifluoromethane	U		0.374	5.00	1	09/01/2023 04:37	WG2125024
1,1-Dichloroethane	U		0.100	1.00	1	09/01/2023 04:37	WG2125024
1,2-Dichloroethane	U		0.0819	1.00	1	09/01/2023 04:37	WG2125024
1,1-Dichloroethene	U		0.188	1.00	1	09/01/2023 04:37	WG2125024
cis-1,2-Dichloroethene	2.23		0.126	1.00	1	09/01/2023 04:37	WG2125024
trans-1,2-Dichloroethene	U		0.149	1.00	1	09/01/2023 04:37	WG2125024
1,2-Dichloropropane	U		0.149	1.00	1	09/01/2023 04:37	WG2125024
1,1-Dichloropropene	U		0.142	1.00	1	09/01/2023 04:37	WG2125024
1,3-Dichloropropane	U		0.110	1.00	1	09/01/2023 04:37	WG2125024
cis-1,3-Dichloropropene	U		0.111	1.00	1	09/01/2023 04:37	WG2125024
trans-1,3-Dichloropropene	U		0.118	1.00	1	09/01/2023 04:37	WG2125024
2,2-Dichloropropane	U		0.161	1.00	1	09/01/2023 04:37	WG2125024
Di-isopropyl ether	U		0.105	1.00	1	09/01/2023 04:37	WG2125024
Ethylbenzene	U		0.137	1.00	1	09/01/2023 04:37	WG2125024
Hexachloro-1,3-butadiene	U	C3	0.337	1.00	1	09/01/2023 04:37	WG2125024
Isopropylbenzene	0.688	J	0.105	1.00	1	09/01/2023 04:37	WG2125024
p-Isopropyltoluene	U		0.120	1.00	1	09/01/2023 04:37	WG2125024
2-Butanone (MEK)	U		1.19	10.0	1	09/01/2023 04:37	WG2125024
Methylene Chloride	U		0.430	5.00	1	09/01/2023 04:37	WG2125024
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	09/01/2023 04:37	WG2125024
Methyl tert-butyl ether	1.67		0.101	1.00	1	09/01/2023 04:37	WG2125024
Naphthalene	U	C3	1.00	5.00	1	09/01/2023 04:37	WG2125024
n-Propylbenzene	U		0.0993	1.00	1	09/01/2023 04:37	WG2125024
Styrene	U		0.118	1.00	1	09/01/2023 04:37	WG2125024

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	09/01/2023 04:37	WG2125024
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	09/01/2023 04:37	WG2125024
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	09/01/2023 04:37	WG2125024
Tetrachloroethene	U		0.300	1.00	1	09/01/2023 04:37	WG2125024
Toluene	U		0.278	1.00	1	09/01/2023 04:37	WG2125024
1,2,3-Trichlorobenzene	U	C3	0.230	1.00	1	09/01/2023 04:37	WG2125024
1,2,4-Trichlorobenzene	U		0.481	1.00	1	09/01/2023 04:37	WG2125024
1,1,1-Trichloroethane	U		0.149	1.00	1	09/01/2023 04:37	WG2125024
1,1,2-Trichloroethane	U		0.158	1.00	1	09/01/2023 04:37	WG2125024
Trichloroethene	U		0.190	1.00	1	09/01/2023 04:37	WG2125024
Trichlorofluoromethane	U		0.160	5.00	1	09/01/2023 04:37	WG2125024
1,2,3-Trichloropropane	U		0.237	2.50	1	09/01/2023 04:37	WG2125024
1,2,4-Trimethylbenzene	U		0.322	1.00	1	09/01/2023 04:37	WG2125024
1,2,3-Trimethylbenzene	U		0.104	1.00	1	09/01/2023 04:37	WG2125024
1,3,5-Trimethylbenzene	U		0.104	1.00	1	09/01/2023 04:37	WG2125024
Vinyl chloride	U		0.234	1.00	1	09/01/2023 04:37	WG2125024
Xylenes, Total	U		0.174	3.00	1	09/01/2023 04:37	WG2125024
(S) Toluene-d8	*105*			*80.0-120*		*09/01/2023 04:37*	WG2125024
(S) 4-Bromofluorobenzene	*104*			*77.0-126*		*09/01/2023 04:37*	WG2125024
(S) 1,2-Dichloroethane-d4	*92.1*			*70.0-130*		*09/01/2023 04:37*	WG2125024

Wet Chemistry by Method 9060A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
TOC (Total Organic Carbon)	6580		102	1000	1	09/13/2023 18:35	WG2126859

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		282	1250	25	09/01/2023 16:52	WG2125232
Acrolein	U		63.5	1250	25	09/01/2023 16:52	WG2125232
Acrylonitrile	U		16.8	250	25	09/01/2023 16:52	WG2125232
Benzene	U		2.35	25.0	25	09/01/2023 16:52	WG2125232
Bromobenzene	U		2.95	25.0	25	09/01/2023 16:52	WG2125232
Bromodichloromethane	U		3.40	25.0	25	09/01/2023 16:52	WG2125232
Bromoform	U		3.22	25.0	25	09/01/2023 16:52	WG2125232
Bromomethane	U		15.1	125	25	09/01/2023 16:52	WG2125232
n-Butylbenzene	U		3.93	25.0	25	09/01/2023 16:52	WG2125232
sec-Butylbenzene	U		3.13	25.0	25	09/01/2023 16:52	WG2125232
tert-Butylbenzene	U		3.18	25.0	25	09/01/2023 16:52	WG2125232
Carbon disulfide	U		2.41	25.0	25	09/01/2023 16:52	WG2125232
Carbon tetrachloride	U		3.20	25.0	25	09/01/2023 16:52	WG2125232
Chlorobenzene	U		2.90	25.0	25	09/01/2023 16:52	WG2125232
Chlorodibromomethane	U		3.50	25.0	25	09/01/2023 16:52	WG2125232
Chloroethane	U		4.80	125	25	09/01/2023 16:52	WG2125232
Chloroform	U		2.78	125	25	09/01/2023 16:52	WG2125232
Chloromethane	U		24.0	62.5	25	09/01/2023 16:52	WG2125232
2-Chlorotoluene	U		2.65	25.0	25	09/01/2023 16:52	WG2125232
4-Chlorotoluene	U		2.85	25.0	25	09/01/2023 16:52	WG2125232
1,2-Dibromo-3-Chloropropane	U		6.90	125	25	09/01/2023 16:52	WG2125232
1,2-Dibromoethane	U		3.15	25.0	25	09/01/2023 16:52	WG2125232
Dibromomethane	U		3.05	25.0	25	09/01/2023 16:52	WG2125232
1,2-Dichlorobenzene	U		2.68	25.0	25	09/01/2023 16:52	WG2125232
1,3-Dichlorobenzene	U		2.75	25.0	25	09/01/2023 16:52	WG2125232
1,4-Dichlorobenzene	U		3.00	25.0	25	09/01/2023 16:52	WG2125232
Dichlorodifluoromethane	U		9.35	125	25	09/01/2023 16:52	WG2125232
1,1-Dichloroethane	U		2.50	25.0	25	09/01/2023 16:52	WG2125232
1,2-Dichloroethane	U		2.05	25.0	25	09/01/2023 16:52	WG2125232
1,1-Dichloroethene	U		4.70	25.0	25	09/01/2023 16:52	WG2125232
cis-1,2-Dichloroethene	218		3.15	25.0	25	09/01/2023 16:52	WG2125232
trans-1,2-Dichloroethene	U		3.73	25.0	25	09/01/2023 16:52	WG2125232
1,2-Dichloropropane	U		3.73	25.0	25	09/01/2023 16:52	WG2125232
1,1-Dichloropropene	U		3.55	25.0	25	09/01/2023 16:52	WG2125232
1,3-Dichloropropane	U		2.75	25.0	25	09/01/2023 16:52	WG2125232
cis-1,3-Dichloropropene	U		2.78	25.0	25	09/01/2023 16:52	WG2125232
trans-1,3-Dichloropropene	U		2.95	25.0	25	09/01/2023 16:52	WG2125232
2,2-Dichloropropane	U		4.03	25.0	25	09/01/2023 16:52	WG2125232
Di-isopropyl ether	U		2.63	25.0	25	09/01/2023 16:52	WG2125232
Ethylbenzene	U		3.43	25.0	25	09/01/2023 16:52	WG2125232
Hexachloro-1,3-butadiene	U		8.43	25.0	25	09/01/2023 16:52	WG2125232
Isopropylbenzene	U		2.63	25.0	25	09/01/2023 16:52	WG2125232
p-Isopropyltoluene	U		3.00	25.0	25	09/01/2023 16:52	WG2125232
2-Butanone (MEK)	U		29.8	250	25	09/01/2023 16:52	WG2125232
Methylene Chloride	U		10.7	125	25	09/01/2023 16:52	WG2125232
4-Methyl-2-pentanone (MIBK)	U		12.0	250	25	09/01/2023 16:52	WG2125232
Methyl tert-butyl ether	U		2.53	25.0	25	09/01/2023 16:52	WG2125232
Naphthalene	U		25.0	125	25	09/01/2023 16:52	WG2125232
n-Propylbenzene	U		2.48	25.0	25	09/01/2023 16:52	WG2125232
Styrene	U		2.95	25.0	25	09/01/2023 16:52	WG2125232

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
1,1,1,2-Tetrachloroethane	U		3.68	25.0	25	09/01/2023 16:52	WG2125232
1,1,2,2-Tetrachloroethane	U		3.33	25.0	25	09/01/2023 16:52	WG2125232
1,1,2-Trichlorotrifluoroethane	U		4.50	25.0	25	09/01/2023 16:52	WG2125232
Tetrachloroethene	U		7.50	25.0	25	09/01/2023 16:52	WG2125232
Toluene	U		6.95	25.0	25	09/01/2023 16:52	WG2125232
1,2,3-Trichlorobenzene	U		5.75	25.0	25	09/01/2023 16:52	WG2125232
1,2,4-Trichlorobenzene	U		12.0	25.0	25	09/01/2023 16:52	WG2125232
1,1,1-Trichloroethane	U		3.73	25.0	25	09/01/2023 16:52	WG2125232
1,1,2-Trichloroethane	U		3.95	25.0	25	09/01/2023 16:52	WG2125232
Trichloroethene	U		4.75	25.0	25	09/01/2023 16:52	WG2125232
Trichlorofluoromethane	U		4.00	125	25	09/01/2023 16:52	WG2125232
1,2,3-Trichloropropane	U		5.93	62.5	25	09/01/2023 16:52	WG2125232
1,2,4-Trimethylbenzene	U		8.05	25.0	25	09/01/2023 16:52	WG2125232
1,2,3-Trimethylbenzene	U		2.60	25.0	25	09/01/2023 16:52	WG2125232
1,3,5-Trimethylbenzene	U		2.60	25.0	25	09/01/2023 16:52	WG2125232
Vinyl chloride	417	C5	5.85	25.0	25	09/01/2023 16:52	WG2125232
Xylenes, Total	U		4.35	75.0	25	09/01/2023 16:52	WG2125232
(S) Toluene-d8	*102*			*80.0-120*		*09/01/2023 16:52*	WG2125232
(S) 4-Bromofluorobenzene	*91.4*			*77.0-126*		*09/01/2023 16:52*	WG2125232
(S) 1,2-Dichloroethane-d4	*97.9*			*70.0-130*		*09/01/2023 16:52*	WG2125232

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		11.3	50.0	1	09/01/2023 04:58	WG2125024
Acrolein	U	C3	2.54	50.0	1	09/01/2023 04:58	WG2125024
Acrylonitrile	U		0.671	10.0	1	09/01/2023 04:58	WG2125024
Benzene	U		0.0941	1.00	1	09/01/2023 04:58	WG2125024
Bromobenzene	U		0.118	1.00	1	09/01/2023 04:58	WG2125024
Bromodichloromethane	U		0.136	1.00	1	09/01/2023 04:58	WG2125024
Bromoform	U		0.129	1.00	1	09/01/2023 04:58	WG2125024
Bromomethane	U		0.605	5.00	1	09/01/2023 04:58	WG2125024
n-Butylbenzene	U		0.157	1.00	1	09/01/2023 04:58	WG2125024
sec-Butylbenzene	U		0.125	1.00	1	09/01/2023 04:58	WG2125024
tert-Butylbenzene	U		0.127	1.00	1	09/01/2023 04:58	WG2125024
Carbon disulfide	U		0.0962	1.00	1	09/01/2023 04:58	WG2125024
Carbon tetrachloride	U		0.128	1.00	1	09/01/2023 04:58	WG2125024
Chlorobenzene	U		0.116	1.00	1	09/01/2023 04:58	WG2125024
Chlorodibromomethane	U		0.140	1.00	1	09/01/2023 04:58	WG2125024
Chloroethane	U		0.192	5.00	1	09/01/2023 04:58	WG2125024
Chloroform	U		0.111	5.00	1	09/01/2023 04:58	WG2125024
Chloromethane	U		0.960	2.50	1	09/01/2023 04:58	WG2125024
2-Chlorotoluene	U		0.106	1.00	1	09/01/2023 04:58	WG2125024
4-Chlorotoluene	U		0.114	1.00	1	09/01/2023 04:58	WG2125024
1,2-Dibromo-3-Chloropropane	U	C3	0.276	5.00	1	09/01/2023 04:58	WG2125024
1,2-Dibromoethane	U		0.126	1.00	1	09/01/2023 04:58	WG2125024
Dibromomethane	U		0.122	1.00	1	09/01/2023 04:58	WG2125024
1,2-Dichlorobenzene	U		0.107	1.00	1	09/01/2023 04:58	WG2125024
1,3-Dichlorobenzene	U		0.110	1.00	1	09/01/2023 04:58	WG2125024
1,4-Dichlorobenzene	U		0.120	1.00	1	09/01/2023 04:58	WG2125024
Dichlorodifluoromethane	U		0.374	5.00	1	09/01/2023 04:58	WG2125024
1,1-Dichloroethane	U		0.100	1.00	1	09/01/2023 04:58	WG2125024
1,2-Dichloroethane	U		0.0819	1.00	1	09/01/2023 04:58	WG2125024
1,1-Dichloroethene	U		0.188	1.00	1	09/01/2023 04:58	WG2125024
cis-1,2-Dichloroethene	0.509	J	0.126	1.00	1	09/01/2023 04:58	WG2125024
trans-1,2-Dichloroethene	U		0.149	1.00	1	09/01/2023 04:58	WG2125024
1,2-Dichloropropane	U		0.149	1.00	1	09/01/2023 04:58	WG2125024
1,1-Dichloropropene	U		0.142	1.00	1	09/01/2023 04:58	WG2125024
1,3-Dichloropropane	U		0.110	1.00	1	09/01/2023 04:58	WG2125024
cis-1,3-Dichloropropene	U		0.111	1.00	1	09/01/2023 04:58	WG2125024
trans-1,3-Dichloropropene	U		0.118	1.00	1	09/01/2023 04:58	WG2125024
2,2-Dichloropropane	U		0.161	1.00	1	09/01/2023 04:58	WG2125024
Di-isopropyl ether	U		0.105	1.00	1	09/01/2023 04:58	WG2125024
Ethylbenzene	U		0.137	1.00	1	09/01/2023 04:58	WG2125024
Hexachloro-1,3-butadiene	U	C3	0.337	1.00	1	09/01/2023 04:58	WG2125024
Isopropylbenzene	U		0.105	1.00	1	09/01/2023 04:58	WG2125024
p-Isopropyltoluene	U		0.120	1.00	1	09/01/2023 04:58	WG2125024
2-Butanone (MEK)	U		1.19	10.0	1	09/01/2023 04:58	WG2125024
Methylene Chloride	U		0.430	5.00	1	09/01/2023 04:58	WG2125024
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	09/01/2023 04:58	WG2125024
Methyl tert-butyl ether	0.444	J	0.101	1.00	1	09/01/2023 04:58	WG2125024
Naphthalene	U	C3	1.00	5.00	1	09/01/2023 04:58	WG2125024
n-Propylbenzene	U		0.0993	1.00	1	09/01/2023 04:58	WG2125024
Styrene	U		0.118	1.00	1	09/01/2023 04:58	WG2125024
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	09/01/2023 04:58	WG2125024
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	09/01/2023 04:58	WG2125024
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	09/01/2023 04:58	WG2125024
Tetrachloroethene	U		0.300	1.00	1	09/01/2023 04:58	WG2125024
Toluene	1.07		0.278	1.00	1	09/01/2023 04:58	WG2125024
1,2,3-Trichlorobenzene	U	C3	0.230	1.00	1	09/01/2023 04:58	WG2125024

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
1,2,4-Trichlorobenzene	U		0.481	1.00	1	09/01/2023 04:58	WG2125024
1,1,1-Trichloroethane	U		0.149	1.00	1	09/01/2023 04:58	WG2125024
1,1,2-Trichloroethane	U		0.158	1.00	1	09/01/2023 04:58	WG2125024
Trichloroethene	U		0.190	1.00	1	09/01/2023 04:58	WG2125024
Trichlorofluoromethane	U		0.160	5.00	1	09/01/2023 04:58	WG2125024
1,2,3-Trichloropropane	U		0.237	2.50	1	09/01/2023 04:58	WG2125024
1,2,4-Trimethylbenzene	U		0.322	1.00	1	09/01/2023 04:58	WG2125024
1,2,3-Trimethylbenzene	U		0.104	1.00	1	09/01/2023 04:58	WG2125024
1,3,5-Trimethylbenzene	U		0.104	1.00	1	09/01/2023 04:58	WG2125024
Vinyl chloride	U		0.234	1.00	1	09/01/2023 04:58	WG2125024
Xylenes, Total	U		0.174	3.00	1	09/01/2023 04:58	WG2125024
(S) Toluene-d8	*105*			*80.0-120*		*09/01/2023 04:58*	WG2125024
(S) 4-Bromofluorobenzene	*103*			*77.0-126*		*09/01/2023 04:58*	WG2125024
(S) 1,2-Dichloroethane-d4	*87.1*			*70.0-130*		*09/01/2023 04:58*	WG2125024

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	12.6	J	11.3	50.0	1	09/06/2023 21:18	WG2127620
Acrolein	U	C3	2.54	50.0	1	09/06/2023 21:18	WG2127620
Acrylonitrile	U		0.671	10.0	1	09/06/2023 21:18	WG2127620
Benzene	2.01		0.0941	1.00	1	09/06/2023 21:18	WG2127620
Bromobenzene	U		0.118	1.00	1	09/06/2023 21:18	WG2127620
Bromodichloromethane	U		0.136	1.00	1	09/06/2023 21:18	WG2127620
Bromoform	U		0.129	1.00	1	09/06/2023 21:18	WG2127620
Bromomethane	U		0.605	5.00	1	09/06/2023 21:18	WG2127620
n-Butylbenzene	0.281	J	0.157	1.00	1	09/06/2023 21:18	WG2127620
sec-Butylbenzene	0.739	J	0.125	1.00	1	09/06/2023 21:18	WG2127620
tert-Butylbenzene	U		0.127	1.00	1	09/06/2023 21:18	WG2127620
Carbon disulfide	U		0.0962	1.00	1	09/06/2023 21:18	WG2127620
Carbon tetrachloride	U		0.128	1.00	1	09/06/2023 21:18	WG2127620
Chlorobenzene	U		0.116	1.00	1	09/06/2023 21:18	WG2127620
Chlorodibromomethane	U		0.140	1.00	1	09/06/2023 21:18	WG2127620
Chloroethane	0.541	J	0.192	5.00	1	09/06/2023 21:18	WG2127620
Chloroform	U		0.111	5.00	1	09/06/2023 21:18	WG2127620
Chloromethane	U	C3	0.960	2.50	1	09/06/2023 21:18	WG2127620
2-Chlorotoluene	U		0.106	1.00	1	09/06/2023 21:18	WG2127620
4-Chlorotoluene	U		0.114	1.00	1	09/06/2023 21:18	WG2127620
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	09/06/2023 21:18	WG2127620
1,2-Dibromoethane	U		0.126	1.00	1	09/06/2023 21:18	WG2127620
Dibromomethane	U		0.122	1.00	1	09/06/2023 21:18	WG2127620
1,2-Dichlorobenzene	U		0.107	1.00	1	09/06/2023 21:18	WG2127620
1,3-Dichlorobenzene	U		0.110	1.00	1	09/06/2023 21:18	WG2127620
1,4-Dichlorobenzene	U		0.120	1.00	1	09/06/2023 21:18	WG2127620
Dichlorodifluoromethane	U		0.374	5.00	1	09/06/2023 21:18	WG2127620
1,1-Dichloroethane	U		0.100	1.00	1	09/06/2023 21:18	WG2127620
1,2-Dichloroethane	U		0.0819	1.00	1	09/06/2023 21:18	WG2127620
1,1-Dichloroethene	U		0.188	1.00	1	09/06/2023 21:18	WG2127620
cis-1,2-Dichloroethene	7.22		0.126	1.00	1	09/06/2023 21:18	WG2127620
trans-1,2-Dichloroethene	0.563	J	0.149	1.00	1	09/06/2023 21:18	WG2127620
1,2-Dichloropropane	U		0.149	1.00	1	09/06/2023 21:18	WG2127620
1,1-Dichloropropene	U		0.142	1.00	1	09/06/2023 21:18	WG2127620
1,3-Dichloropropane	U		0.110	1.00	1	09/06/2023 21:18	WG2127620
cis-1,3-Dichloropropene	U		0.111	1.00	1	09/06/2023 21:18	WG2127620
trans-1,3-Dichloropropene	U		0.118	1.00	1	09/06/2023 21:18	WG2127620
2,2-Dichloropropane	U		0.161	1.00	1	09/06/2023 21:18	WG2127620
Di-isopropyl ether	U		0.105	1.00	1	09/06/2023 21:18	WG2127620
Ethylbenzene	1.75		0.137	1.00	1	09/06/2023 21:18	WG2127620
Hexachloro-1,3-butadiene	U		0.337	1.00	1	09/06/2023 21:18	WG2127620
Isopropylbenzene	6.39		0.105	1.00	1	09/06/2023 21:18	WG2127620
p-Isopropyltoluene	U		0.120	1.00	1	09/06/2023 21:18	WG2127620
2-Butanone (MEK)	U		1.19	10.0	1	09/06/2023 21:18	WG2127620
Methylene Chloride	U		0.430	5.00	1	09/06/2023 21:18	WG2127620
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	09/06/2023 21:18	WG2127620
Methyl tert-butyl ether	U		0.101	1.00	1	09/06/2023 21:18	WG2127620
Naphthalene	U		1.00	5.00	1	09/06/2023 21:18	WG2127620
n-Propylbenzene	1.52		0.0993	1.00	1	09/06/2023 21:18	WG2127620
Styrene	U		0.118	1.00	1	09/06/2023 21:18	WG2127620
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	09/06/2023 21:18	WG2127620
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	09/06/2023 21:18	WG2127620
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	09/06/2023 21:18	WG2127620
Tetrachloroethene	U		0.300	1.00	1	09/06/2023 21:18	WG2127620
Toluene	1.95		0.278	1.00	1	09/06/2023 21:18	WG2127620
1,2,3-Trichlorobenzene	U		0.230	1.00	1	09/06/2023 21:18	WG2127620

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
1,2,4-Trichlorobenzene	U		0.481	1.00	1	09/06/2023 21:18	WG2127620
1,1,1-Trichloroethane	U		0.149	1.00	1	09/06/2023 21:18	WG2127620
1,1,2-Trichloroethane	U		0.158	1.00	1	09/06/2023 21:18	WG2127620
Trichloroethene	U		0.190	1.00	1	09/06/2023 21:18	WG2127620
Trichlorofluoromethane	U		0.160	5.00	1	09/06/2023 21:18	WG2127620
1,2,3-Trichloropropane	U		0.237	2.50	1	09/06/2023 21:18	WG2127620
1,2,4-Trimethylbenzene	0.738	J	0.322	1.00	1	09/06/2023 21:18	WG2127620
1,2,3-Trimethylbenzene	1.52		0.104	1.00	1	09/06/2023 21:18	WG2127620
1,3,5-Trimethylbenzene	0.159	J	0.104	1.00	1	09/06/2023 21:18	WG2127620
Vinyl chloride	5.35		0.234	1.00	1	09/06/2023 21:18	WG2127620
Xylenes, Total	2.08	J	0.174	3.00	1	09/06/2023 21:18	WG2127620
(S) Toluene-d8	*108*			*80.0-120*		*09/06/2023 21:18*	WG2127620
(S) 4-Bromofluorobenzene	*104*			*77.0-126*		*09/06/2023 21:18*	WG2127620
(S) 1,2-Dichloroethane-d4	*104*			*70.0-130*		*09/06/2023 21:18*	WG2127620

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		1130	5000	100	09/01/2023 17:31	WG2125232
Acrolein	U		254	5000	100	09/01/2023 17:31	WG2125232
Acrylonitrile	U		67.1	1000	100	09/01/2023 17:31	WG2125232
Benzene	U		9.41	100	100	09/01/2023 17:31	WG2125232
Bromobenzene	U		11.8	100	100	09/01/2023 17:31	WG2125232
Bromodichloromethane	U		13.6	100	100	09/01/2023 17:31	WG2125232
Bromoform	U		12.9	100	100	09/01/2023 17:31	WG2125232
Bromomethane	U		60.5	500	100	09/01/2023 17:31	WG2125232
n-Butylbenzene	U		15.7	100	100	09/01/2023 17:31	WG2125232
sec-Butylbenzene	U		12.5	100	100	09/01/2023 17:31	WG2125232
tert-Butylbenzene	U		12.7	100	100	09/01/2023 17:31	WG2125232
Carbon disulfide	U		9.62	100	100	09/01/2023 17:31	WG2125232
Carbon tetrachloride	U		12.8	100	100	09/01/2023 17:31	WG2125232
Chlorobenzene	U		11.6	100	100	09/01/2023 17:31	WG2125232
Chlorodibromomethane	U		14.0	100	100	09/01/2023 17:31	WG2125232
Chloroethane	U		19.2	500	100	09/01/2023 17:31	WG2125232
Chloroform	U		11.1	500	100	09/01/2023 17:31	WG2125232
Chloromethane	U		96.0	250	100	09/01/2023 17:31	WG2125232
2-Chlorotoluene	U		10.6	100	100	09/01/2023 17:31	WG2125232
4-Chlorotoluene	U		11.4	100	100	09/01/2023 17:31	WG2125232
1,2-Dibromo-3-Chloropropane	U		27.6	500	100	09/01/2023 17:31	WG2125232
1,2-Dibromoethane	U		12.6	100	100	09/01/2023 17:31	WG2125232
Dibromomethane	U		12.2	100	100	09/01/2023 17:31	WG2125232
1,2-Dichlorobenzene	U		10.7	100	100	09/01/2023 17:31	WG2125232
1,3-Dichlorobenzene	U		11.0	100	100	09/01/2023 17:31	WG2125232
1,4-Dichlorobenzene	U		12.0	100	100	09/01/2023 17:31	WG2125232
Dichlorodifluoromethane	U		37.4	500	100	09/01/2023 17:31	WG2125232
1,1-Dichloroethane	U		10.0	100	100	09/01/2023 17:31	WG2125232
1,2-Dichloroethane	U		8.19	100	100	09/01/2023 17:31	WG2125232
1,1-Dichloroethene	40.6	J	18.8	100	100	09/01/2023 17:31	WG2125232
cis-1,2-Dichloroethene	63000		630	5000	5000	09/06/2023 23:53	WG2127620
trans-1,2-Dichloroethene	144		14.9	100	100	09/01/2023 17:31	WG2125232
1,2-Dichloropropane	U		14.9	100	100	09/01/2023 17:31	WG2125232
1,1-Dichloropropene	U		14.2	100	100	09/01/2023 17:31	WG2125232
1,3-Dichloropropane	U		11.0	100	100	09/01/2023 17:31	WG2125232
cis-1,3-Dichloropropene	U		11.1	100	100	09/01/2023 17:31	WG2125232
trans-1,3-Dichloropropene	U		11.8	100	100	09/01/2023 17:31	WG2125232
2,2-Dichloropropane	U		16.1	100	100	09/01/2023 17:31	WG2125232
Di-isopropyl ether	U		10.5	100	100	09/01/2023 17:31	WG2125232
Ethylbenzene	U		13.7	100	100	09/01/2023 17:31	WG2125232
Hexachloro-1,3-butadiene	U		33.7	100	100	09/01/2023 17:31	WG2125232
Isopropylbenzene	U		10.5	100	100	09/01/2023 17:31	WG2125232
p-Isopropyltoluene	U		12.0	100	100	09/01/2023 17:31	WG2125232
2-Butanone (MEK)	U		119	1000	100	09/01/2023 17:31	WG2125232
Methylene Chloride	U		43.0	500	100	09/01/2023 17:31	WG2125232
4-Methyl-2-pentanone (MIBK)	U		47.8	1000	100	09/01/2023 17:31	WG2125232
Methyl tert-butyl ether	U		10.1	100	100	09/01/2023 17:31	WG2125232
Naphthalene	U		100	500	100	09/01/2023 17:31	WG2125232
n-Propylbenzene	U		9.93	100	100	09/01/2023 17:31	WG2125232
Styrene	U		11.8	100	100	09/01/2023 17:31	WG2125232
1,1,1,2-Tetrachloroethane	U		14.7	100	100	09/01/2023 17:31	WG2125232
1,1,2,2-Tetrachloroethane	U		13.3	100	100	09/01/2023 17:31	WG2125232
1,1,2-Trichlorotrifluoroethane	U		18.0	100	100	09/01/2023 17:31	WG2125232
Tetrachloroethene	5520		30.0	100	100	09/01/2023 17:31	WG2125232
Toluene	U		27.8	100	100	09/01/2023 17:31	WG2125232
1,2,3-Trichlorobenzene	U		23.0	100	100	09/01/2023 17:31	WG2125232

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
1,2,4-Trichlorobenzene	U		48.1	100	100	09/01/2023 17:31	WG2125232
1,1,1-Trichloroethane	U		14.9	100	100	09/01/2023 17:31	WG2125232
1,1,2-Trichloroethane	U		15.8	100	100	09/01/2023 17:31	WG2125232
Trichloroethene	1910		19.0	100	100	09/01/2023 17:31	WG2125232
Trichlorofluoromethane	U		16.0	500	100	09/01/2023 17:31	WG2125232
1,2,3-Trichloropropane	U		23.7	250	100	09/01/2023 17:31	WG2125232
1,2,4-Trimethylbenzene	U		32.2	100	100	09/01/2023 17:31	WG2125232
1,2,3-Trimethylbenzene	U		10.4	100	100	09/01/2023 17:31	WG2125232
1,3,5-Trimethylbenzene	U		10.4	100	100	09/01/2023 17:31	WG2125232
Vinyl chloride	16400		1170	5000	5000	09/06/2023 23:53	WG2127620
Xylenes, Total	U		17.4	300	100	09/01/2023 17:31	WG2125232
(S) Toluene-d8	*99.3*			*80.0-120*		*09/01/2023 17:31*	WG2125232
(S) Toluene-d8	*108*			*80.0-120*		*09/06/2023 23:53*	WG2127620
(S) 4-Bromofluorobenzene	*95.0*			*77.0-126*		*09/01/2023 17:31*	WG2125232
(S) 4-Bromofluorobenzene	*106*			*77.0-126*		*09/06/2023 23:53*	WG2127620
(S) 1,2-Dichloroethane-d4	*96.3*			*70.0-130*		*09/01/2023 17:31*	WG2125232
(S) 1,2-Dichloroethane-d4	*110*			*70.0-130*		*09/06/2023 23:53*	WG2127620

Method Blank (MB)

(MB) R3972231-2 09/11/23 11:50

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOC (Total Organic Carbon)	U		102	1000

L1651073-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1651073-01 09/12/23 14:20 • (DUP) R3972231-3 09/12/23 14:45

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOC (Total Organic Carbon)	11000	11400	1	3.30		20

L1651267-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1651267-02 09/12/23 20:10 • (DUP) R3972231-8 09/12/23 20:28

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOC (Total Organic Carbon)	4320	4620	1	6.74		20

Laboratory Control Sample (LCS)

(LCS) R3972231-1 09/11/23 11:37

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TOC (Total Organic Carbon)	25000	25800	103	85.0-115	

L1651073-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1651073-05 09/12/23 16:09 • (MS) R3972231-4 09/12/23 16:35 • (MSD) R3972231-5 09/12/23 17:01

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOC (Total Organic Carbon)	25000	11500	39100	39000	110	110	1	80.0-120			0.128	20

L1651082-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1651082-03 09/12/23 18:29 • (MS) R3972231-6 09/12/23 18:54 • (MSD) R3972231-7 09/12/23 19:19

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOC (Total Organic Carbon)	25000	5190	30300	30200	100	100	1	80.0-120			0.265	20

Method Blank (MB)

(MB) R3972879-2 09/13/23 16:54

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOC (Total Organic Carbon)	127	J	102	1000

L1651496-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1651496-02 09/13/23 20:07 • (DUP) R3972879-3 09/13/23 20:23

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOC (Total Organic Carbon)	3170	3110	1	2.01		20

L1651540-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1651540-01 09/13/23 23:46 • (DUP) R3972879-4 09/14/23 00:08

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOC (Total Organic Carbon)	1100	1000	1	8.67		20

Laboratory Control Sample (LCS)

(LCS) R3972879-1 09/13/23 16:40

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TOC (Total Organic Carbon)	25000	25000	100	85.0-115	

L1651540-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1651540-02 09/14/23 00:23 • (MS) R3972879-5 09/14/23 01:28 • (MSD) R3972879-6 09/14/23 02:25

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOC (Total Organic Carbon)	25000	451	26700	26100	105	103	1	80.0-120			2.01	20

L1651540-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1651540-03 09/14/23 02:45 • (MS) R3972879-7 09/14/23 03:11 • (MSD) R3972879-8 09/14/23 03:37

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOC (Total Organic Carbon)	25000	453	26400	26400	104	104	1	80.0-120			0.0758	20

Method Blank (MB)

(MB) R3969100-3 09/01/23 00:10

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	U		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 disulfide	U		0.0962	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

Method Blank (MB)

(MB) R3969100-3 09/01/23 00:10

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Hexachloro-1,3-butadiene	U		0.337	1.00
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	*102*			*80.0-120*
(S) 4-Bromofluorobenzene	*106*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*88.1*			*70.0-130*

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

(LCS) R3969100-1 08/31/23 23:06 • (LCSD) R3969100-2 08/31/23 23:27

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	23.4	24.5	93.6	98.0	19.0-160			4.59	27
Acrolein	25.0	6.68	7.42	26.7	29.7	10.0-160			10.5	26
Acrylonitrile	25.0	23.6	23.2	94.4	92.8	55.0-149			1.71	20

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

(LCS) R3969100-1 08/31/23 23:06 • (LCSD) R3969100-2 08/31/23 23:27

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 %
Benzene	5.00	4.98	5.02	99.6	100	70.0-123			0.800	20
Bromobenzene	5.00	4.48	4.60	89.6	92.0	73.0-121			2.64	20
Bromodichloromethane	5.00	4.73	4.68	94.6	93.6	75.0-120			1.06	20
Bromoform	5.00	4.08	3.98	81.6	79.6	68.0-132			2.48	20
Bromomethane	5.00	5.16	5.31	103	106	10.0-160			2.87	25
n-Butylbenzene	5.00	4.06	4.19	81.2	83.8	73.0-125			3.15	20
sec-Butylbenzene	5.00	4.35	4.49	87.0	89.8	75.0-125			3.17	20
tert-Butylbenzene	5.00	4.63	4.70	92.6	94.0	76.0-124			1.50	20
Carbon disulfide	5.00	4.50	4.47	90.0	89.4	61.0-128			0.669	20
Carbon tetrachloride	5.00	4.72	4.74	94.4	94.8	68.0-126			0.423	20
Chlorobenzene	5.00	4.97	4.97	99.4	99.4	80.0-121			0.000	20
Chlorodibromomethane	5.00	4.63	4.61	92.6	92.2	77.0-125			0.433	20
Chloroethane	5.00	4.65	4.69	93.0	93.8	47.0-150			0.857	20
Chloroform	5.00	4.92	4.90	98.4	98.0	73.0-120			0.407	20
Chloromethane	5.00	4.31	4.45	86.2	89.0	41.0-142			3.20	20
2-Chlorotoluene	5.00	4.87	4.94	97.4	98.8	76.0-123			1.43	20
4-Chlorotoluene	5.00	4.56	4.72	91.2	94.4	75.0-122			3.45	20
1,2-Dibromo-3-Chloropropane	5.00	3.52	3.73	70.4	74.6	58.0-134			5.79	20
1,2-Dibromoethane	5.00	4.72	4.64	94.4	92.8	80.0-122			1.71	20
Dibromomethane	5.00	5.14	5.03	103	101	80.0-120			2.16	20
1,2-Dichlorobenzene	5.00	4.48	4.72	89.6	94.4	79.0-121			5.22	20
1,3-Dichlorobenzene	5.00	4.63	4.73	92.6	94.6	79.0-120			2.14	20
1,4-Dichlorobenzene	5.00	4.66	4.69	93.2	93.8	79.0-120			0.642	20
Dichlorodifluoromethane	5.00	4.63	4.51	92.6	90.2	51.0-149			2.63	20
1,1-Dichloroethane	5.00	4.64	4.54	92.8	90.8	70.0-126			2.18	20
1,2-Dichloroethane	5.00	4.82	4.88	96.4	97.6	70.0-128			1.24	20
1,1-Dichloroethene	5.00	4.70	4.70	94.0	94.0	71.0-124			0.000	20
cis-1,2-Dichloroethene	5.00	5.05	5.06	101	101	73.0-120			0.198	20
trans-1,2-Dichloroethene	5.00	5.14	4.88	103	97.6	73.0-120			5.19	20
1,2-Dichloropropane	5.00	4.79	4.74	95.8	94.8	77.0-125			1.05	20
1,1-Dichloropropene	5.00	4.94	4.84	98.8	96.8	74.0-126			2.04	20
1,3-Dichloropropane	5.00	5.31	4.93	106	98.6	80.0-120			7.42	20
cis-1,3-Dichloropropene	5.00	4.79	4.57	95.8	91.4	80.0-123			4.70	20
trans-1,3-Dichloropropene	5.00	4.56	4.55	91.2	91.0	78.0-124			0.220	20
2,2-Dichloropropane	5.00	4.34	4.47	86.8	89.4	58.0-130			2.95	20
Di-isopropyl ether	5.00	4.89	4.82	97.8	96.4	58.0-138			1.44	20
Ethylbenzene	5.00	4.75	4.58	95.0	91.6	79.0-123			3.64	20
Hexachloro-1,3-butadiene	5.00	3.45	3.55	69.0	71.0	54.0-138			2.86	20
Isopropylbenzene	5.00	4.78	4.78	95.6	95.6	76.0-127			0.000	20
p-Isopropyltoluene	5.00	4.57	4.70	91.4	94.0	76.0-125			2.80	20

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

(LCS) R3969100-1 08/31/23 23:06 • (LCSD) R3969100-2 08/31/23 23:27

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 %
2-Butanone (MEK)	25.0	23.4	23.2	93.6	92.8	44.0-160			0.858	20
Methylene Chloride	5.00	4.85	4.79	97.0	95.8	67.0-120			1.24	20
4-Methyl-2-pentanone (MIBK)	25.0	25.3	24.5	101	98.0	68.0-142			3.21	20
Methyl tert-butyl ether	5.00	4.77	4.85	95.4	97.0	68.0-125			1.66	20
Naphthalene	5.00	3.95	4.11	79.0	82.2	54.0-135			3.97	20
n-Propylbenzene	5.00	4.63	4.64	92.6	92.8	77.0-124			0.216	20
Styrene	5.00	4.61	4.55	92.2	91.0	73.0-130			1.31	20
1,1,1,2-Tetrachloroethane	5.00	4.57	4.76	91.4	95.2	75.0-125			4.07	20
1,1,2,2-Tetrachloroethane	5.00	4.49	4.60	89.8	92.0	65.0-130			2.42	20
1,1,2-Trichlorotrifluoroethane	5.00	4.65	4.68	93.0	93.6	69.0-132			0.643	20
Tetrachloroethene	5.00	4.67	4.52	93.4	90.4	72.0-132			3.26	20
Toluene	5.00	5.06	4.90	101	98.0	79.0-120			3.21	20
1,2,3-Trichlorobenzene	5.00	3.49	3.94	69.8	78.8	50.0-138			12.1	20
1,2,4-Trichlorobenzene	5.00	4.01	4.32	80.2	86.4	57.0-137			7.44	20
1,1,1-Trichloroethane	5.00	5.01	4.87	100	97.4	73.0-124			2.83	20
1,1,2-Trichloroethane	5.00	5.22	4.93	104	98.6	80.0-120			5.71	20
Trichloroethene	5.00	4.90	4.84	98.0	96.8	78.0-124			1.23	20
Trichlorofluoromethane	5.00	4.43	4.30	88.6	86.0	59.0-147			2.98	20
1,2,3-Trichloropropane	5.00	4.81	4.82	96.2	96.4	73.0-130			0.208	20
1,2,4-Trimethylbenzene	5.00	4.57	4.63	91.4	92.6	76.0-121			1.30	20
1,2,3-Trimethylbenzene	5.00	4.42	4.51	88.4	90.2	77.0-120			2.02	20
1,3,5-Trimethylbenzene	5.00	4.51	4.57	90.2	91.4	76.0-122			1.32	20
Vinyl chloride	5.00	4.00	4.05	80.0	81.0	67.0-131			1.24	20
Xylenes, Total	15.0	14.7	14.6	98.0	97.3	79.0-123			0.683	20
(S) Toluene-d8				*103*	*102*	*80.0-120*				
(S) 4-Bromofluorobenzene				*106*	*104*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*88.4*	*88.5*	*70.0-130*				

Method Blank (MB)

(MB) R3969851-4 09/01/23 09:50

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	U		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 disulfide	U		0.0962	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

Method Blank (MB)

(MB) R3969851-4 09/01/23 09:50

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Hexachloro-1,3-butadiene	U		0.337	1.00
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	*103*			*80.0-120*
(S) 4-Bromofluorobenzene	*92.3*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*97.6*			*70.0-130*

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

(LCS) R3969851-1 09/01/23 08:29 • (LCSD) R3969851-2 09/01/23 08:49

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	36.8	37.3	147	149	19.0-160			1.35	27
Acrolein	25.0	23.9	24.0	95.6	96.0	10.0-160			0.418	26
Acrylonitrile	25.0	28.5	28.3	114	113	55.0-149			0.704	20

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

(LCS) R3969851-1 09/01/23 08:29 • (LCSD) R3969851-2 09/01/23 08:49

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 %
Benzene	5.00	5.04	5.04	101	101	70.0-123			0.000	20
Bromobenzene	5.00	4.61	4.50	92.2	90.0	73.0-121			2.41	20
Bromodichloromethane	5.00	5.14	4.98	103	99.6	75.0-120			3.16	20
Bromoform	5.00	5.10	4.85	102	97.0	68.0-132			5.03	20
Bromomethane	5.00	7.75	7.33	155	147	10.0-160			5.57	25
n-Butylbenzene	5.00	4.48	4.39	89.6	87.8	73.0-125			2.03	20
sec-Butylbenzene	5.00	4.69	4.49	93.8	89.8	75.0-125			4.36	20
tert-Butylbenzene	5.00	4.66	4.60	93.2	92.0	76.0-124			1.30	20
Carbon disulfide	5.00	4.90	4.81	98.0	96.2	61.0-128			1.85	20
Carbon tetrachloride	5.00	5.32	5.17	106	103	68.0-126			2.86	20
Chlorobenzene	5.00	5.08	5.00	102	100	80.0-121			1.59	20
Chlorodibromomethane	5.00	5.18	5.03	104	101	77.0-125			2.94	20
Chloroethane	5.00	7.22	6.96	144	139	47.0-150			3.67	20
Chloroform	5.00	5.44	5.32	109	106	73.0-120			2.23	20
Chloromethane	5.00	5.08	4.92	102	98.4	41.0-142			3.20	20
2-Chlorotoluene	5.00	4.65	4.48	93.0	89.6	76.0-123			3.72	20
4-Chlorotoluene	5.00	4.59	4.54	91.8	90.8	75.0-122			1.10	20
1,2-Dibromo-3-Chloropropane	5.00	4.38	4.55	87.6	91.0	58.0-134			3.81	20
1,2-Dibromoethane	5.00	5.06	4.91	101	98.2	80.0-122			3.01	20
Dibromomethane	5.00	5.43	5.32	109	106	80.0-120			2.05	20
1,2-Dichlorobenzene	5.00	5.02	4.95	100	99.0	79.0-121			1.40	20
1,3-Dichlorobenzene	5.00	4.87	4.79	97.4	95.8	79.0-120			1.66	20
1,4-Dichlorobenzene	5.00	4.92	4.75	98.4	95.0	79.0-120			3.52	20
Dichlorodifluoromethane	5.00	5.09	4.89	102	97.8	51.0-149			4.01	20
1,1-Dichloroethane	5.00	5.33	5.29	107	106	70.0-126			0.753	20
1,2-Dichloroethane	5.00	5.24	5.22	105	104	70.0-128			0.382	20
1,1-Dichloroethene	5.00	5.01	5.01	100	100	71.0-124			0.000	20
cis-1,2-Dichloroethene	5.00	5.14	5.15	103	103	73.0-120			0.194	20
trans-1,2-Dichloroethene	5.00	5.08	4.94	102	98.8	73.0-120			2.79	20
1,2-Dichloropropane	5.00	5.32	5.52	106	110	77.0-125			3.69	20
1,1-Dichloropropene	5.00	5.32	5.34	106	107	74.0-126			0.375	20
1,3-Dichloropropane	5.00	4.94	4.82	98.8	96.4	80.0-120			2.46	20
cis-1,3-Dichloropropene	5.00	4.93	4.75	98.6	95.0	80.0-123			3.72	20
trans-1,3-Dichloropropene	5.00	4.93	4.84	98.6	96.8	78.0-124			1.84	20
2,2-Dichloropropane	5.00	4.22	4.32	84.4	86.4	58.0-130			2.34	20
Di-isopropyl ether	5.00	5.56	5.62	111	112	58.0-138			1.07	20
Ethylbenzene	5.00	5.17	4.95	103	99.0	79.0-123			4.35	20
Hexachloro-1,3-butadiene	5.00	4.48	4.22	89.6	84.4	54.0-138			5.98	20
Isopropylbenzene	5.00	4.83	4.65	96.6	93.0	76.0-127			3.80	20
p-Isopropyltoluene	5.00	4.80	4.50	96.0	90.0	76.0-125			6.45	20

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

(LCS) R3969851-1 09/01/23 08:29 • (LCSD) R3969851-2 09/01/23 08:49

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 %
2-Butanone (MEK)	25.0	29.3	29.8	117	119	44.0-160			1.69	20
Methylene Chloride	5.00	4.30	4.32	86.0	86.4	67.0-120			0.464	20
4-Methyl-2-pentanone (MIBK)	25.0	27.9	27.7	112	111	68.0-142			0.719	20
Methyl tert-butyl ether	5.00	4.94	5.04	98.8	101	68.0-125			2.00	20
Naphthalene	5.00	4.17	4.21	83.4	84.2	54.0-135			0.955	20
n-Propylbenzene	5.00	4.81	4.62	96.2	92.4	77.0-124			4.03	20
Styrene	5.00	4.82	4.75	96.4	95.0	73.0-130			1.46	20
1,1,1,2-Tetrachloroethane	5.00	4.89	5.01	97.8	100	75.0-125			2.42	20
1,1,2,2-Tetrachloroethane	5.00	4.81	4.61	96.2	92.2	65.0-130			4.25	20
1,1,2-Trichlorotrifluoroethane	5.00	5.51	5.22	110	104	69.0-132			5.41	20
Tetrachloroethene	5.00	5.05	4.87	101	97.4	72.0-132			3.63	20
Toluene	5.00	4.91	4.78	98.2	95.6	79.0-120			2.68	20
1,2,3-Trichlorobenzene	5.00	4.86	4.66	97.2	93.2	50.0-138			4.20	20
1,2,4-Trichlorobenzene	5.00	4.50	4.48	90.0	89.6	57.0-137			0.445	20
1,1,1-Trichloroethane	5.00	5.21	5.18	104	104	73.0-124			0.577	20
1,1,2-Trichloroethane	5.00	5.01	4.92	100	98.4	80.0-120			1.81	20
Trichloroethene	5.00	5.36	5.36	107	107	78.0-124			0.000	20
Trichlorofluoromethane	5.00	6.35	6.32	127	126	59.0-147			0.474	20
1,2,3-Trichloropropane	5.00	4.78	4.73	95.6	94.6	73.0-130			1.05	20
1,2,4-Trimethylbenzene	5.00	4.71	4.59	94.2	91.8	76.0-121			2.58	20
1,2,3-Trimethylbenzene	5.00	4.80	4.67	96.0	93.4	77.0-120			2.75	20
1,3,5-Trimethylbenzene	5.00	4.66	4.53	93.2	90.6	76.0-122			2.83	20
Vinyl chloride	5.00	6.17	6.21	123	124	67.0-131			0.646	20
Xylenes, Total	15.0	15.1	14.7	101	98.0	79.0-123			2.68	20
(S) Toluene-d8				*100*	*98.8*	*80.0-120*				
(S) 4-Bromofluorobenzene				*93.8*	*93.9*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*99.2*	*101*	*70.0-130*				

L1651362-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1651362-07 09/01/23 13:06 • (MS) R3969851-5 09/01/23 19:54 • (MSD) R3969851-6 09/01/23 20:14

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	25.0	U	33.1	30.4	132	122	1	10.0-160			8.50	35
Acrolein	25.0	U	28.3	22.7	113	90.8	1	10.0-160			22.0	39
Acrylonitrile	25.0	U	25.5	27.5	102	110	1	21.0-160			7.55	32
Benzene	5.00	U	4.64	4.83	92.8	96.6	1	17.0-158			4.01	27
Bromobenzene	5.00	U	4.10	4.44	82.0	88.8	1	30.0-149			7.96	28
Bromodichloromethane	5.00	U	4.69	4.98	93.8	99.6	1	31.0-150			6.00	27

L1651362-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1651362-07 09/01/23 13:06 • (MS) R3969851-5 09/01/23 19:54 • (MSD) R3969851-6 09/01/23 20:14

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromoform	5.00	U	4.51	4.80	90.2	96.0	1	29.0-150			6.23	29
Bromomethane	5.00	U	4.59	4.92	91.8	98.4	1	10.0-160			6.94	38
n-Butylbenzene	5.00	U	4.13	4.48	82.6	89.6	1	31.0-150			8.13	30
sec-Butylbenzene	5.00	U	4.29	4.65	85.8	93.0	1	33.0-155			8.05	29
tert-Butylbenzene	5.00	U	4.26	4.72	85.2	94.4	1	34.0-153			10.2	28
Carbon disulfide	5.00	U	4.10	4.29	82.0	85.8	1	10.0-156			4.53	28
Carbon tetrachloride	5.00	U	5.07	5.31	101	106	1	23.0-159			4.62	28
Chlorobenzene	5.00	U	4.54	4.75	90.8	95.0	1	33.0-152			4.52	27
Chlorodibromomethane	5.00	U	4.49	5.01	89.8	100	1	37.0-149			10.9	27
Chloroethane	5.00	U	6.58	6.75	132	135	1	10.0-160			2.55	30
Chloroform	5.00	U	4.93	5.22	98.6	104	1	29.0-154			5.71	28
Chloromethane	5.00	U	4.37	4.64	87.4	92.8	1	10.0-160			5.99	29
2-Chlorotoluene	5.00	U	4.16	4.52	83.2	90.4	1	32.0-153			8.29	28
4-Chlorotoluene	5.00	U	4.07	4.41	81.4	88.2	1	32.0-150			8.02	28
1,2-Dibromo-3-Chloropropane	5.00	U	4.01	4.33	80.2	86.6	1	22.0-151			7.67	34
1,2-Dibromoethane	5.00	U	4.23	4.76	84.6	95.2	1	34.0-147			11.8	27
Dibromomethane	5.00	U	4.81	5.19	96.2	104	1	30.0-151			7.60	27
1,2-Dichlorobenzene	5.00	U	4.42	4.75	88.4	95.0	1	34.0-149			7.20	28
1,3-Dichlorobenzene	5.00	U	4.43	4.78	88.6	95.6	1	36.0-146			7.60	27
1,4-Dichlorobenzene	5.00	U	4.31	4.82	86.2	96.4	1	35.0-142			11.2	27
Dichlorodifluoromethane	5.00	U	4.58	4.66	91.6	93.2	1	10.0-160			1.73	29
1,1-Dichloroethane	5.00	U	4.80	5.13	96.0	103	1	25.0-158			6.65	27
1,2-Dichloroethane	5.00	U	4.64	5.02	92.8	100	1	29.0-151			7.87	27
1,1-Dichloroethene	5.00	U	4.67	4.94	93.4	98.8	1	11.0-160			5.62	29
cis-1,2-Dichloroethene	5.00	U	4.68	5.01	93.6	100	1	10.0-160			6.81	27
trans-1,2-Dichloroethene	5.00	U	4.52	4.66	90.4	93.2	1	17.0-153			3.05	27
1,2-Dichloropropane	5.00	U	4.81	5.22	96.2	104	1	30.0-156			8.18	27
1,1-Dichloropropene	5.00	U	5.01	5.08	100	102	1	25.0-158			1.39	27
1,3-Dichloropropane	5.00	U	4.37	4.72	87.4	94.4	1	38.0-147			7.70	27
cis-1,3-Dichloropropene	5.00	U	4.16	4.71	83.2	94.2	1	34.0-149			12.4	28
trans-1,3-Dichloropropene	5.00	U	4.17	4.60	83.4	92.0	1	32.0-149			9.81	28
2,2-Dichloropropane	5.00	U	4.27	4.57	85.4	91.4	1	24.0-152			6.79	29
Di-isopropyl ether	5.00	U	5.06	5.51	101	110	1	21.0-160			8.51	28
Ethylbenzene	5.00	U	4.70	4.98	94.0	99.6	1	30.0-155			5.79	27
Hexachloro-1,3-butadiene	5.00	U	4.05	4.40	81.0	88.0	1	20.0-154			8.28	34
Isopropylbenzene	5.00	U	4.43	4.66	88.6	93.2	1	28.0-157			5.06	27
p-Isopropyltoluene	5.00	U	4.27	4.69	85.4	93.8	1	30.0-154			9.37	29
2-Butanone (MEK)	25.0	U	26.3	28.8	105	115	1	10.0-160			9.07	32
Methylene Chloride	5.00	U	3.47	3.74	69.4	74.8	1	23.0-144			7.49	28
4-Methyl-2-pentanone (MIBK)	25.0	U	24.0	26.3	96.0	105	1	29.0-160			9.15	29

L1651362-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1651362-07 09/01/23 13:06 • (MS) R3969851-5 09/01/23 19:54 • (MSD) R3969851-6 09/01/23 20:14

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Methyl tert-butyl ether	5.00	2.32	6.83	7.42	90.2	102	1	28.0-150			8.28	29
Naphthalene	5.00	U	5.11	4.61	102	92.2	1	12.0-156			10.3	35
n-Propylbenzene	5.00	U	4.30	4.56	86.0	91.2	1	31.0-154			5.87	28
Styrene	5.00	U	4.29	4.39	85.8	87.8	1	33.0-155			2.30	28
1,1,1,2-Tetrachloroethane	5.00	U	4.65	4.79	93.0	95.8	1	36.0-151			2.97	29
1,1,2,2-Tetrachloroethane	5.00	U	4.36	4.88	87.2	97.6	1	33.0-150			11.3	28
1,1,2-Trichlorotrifluoroethane	5.00	U	5.31	5.73	106	115	1	23.0-160			7.61	30
Tetrachloroethene	5.00	U	4.52	4.68	90.4	93.6	1	10.0-160			3.48	27
Toluene	5.00	U	4.20	4.50	84.0	90.0	1	26.0-154			6.90	28
1,2,3-Trichlorobenzene	5.00	U	4.06	4.59	81.2	91.8	1	17.0-150			12.3	36
1,2,4-Trichlorobenzene	5.00	U	4.15	4.37	83.0	87.4	1	24.0-150			5.16	33
1,1,1-Trichloroethane	5.00	U	4.89	5.17	97.8	103	1	23.0-160			5.57	28
1,1,2-Trichloroethane	5.00	U	4.47	4.90	89.4	98.0	1	35.0-147			9.18	27
Trichloroethene	5.00	U	4.75	5.01	95.0	100	1	10.0-160			5.33	25
Trichlorofluoromethane	5.00	U	6.75	6.73	135	135	1	17.0-160			0.297	31
1,2,3-Trichloropropane	5.00	U	4.05	4.35	81.0	87.0	1	34.0-151			7.14	29
1,2,4-Trimethylbenzene	5.00	U	4.21	4.54	84.2	90.8	1	26.0-154			7.54	27
1,2,3-Trimethylbenzene	5.00	U	4.24	4.64	84.8	92.8	1	32.0-149			9.01	28
1,3,5-Trimethylbenzene	5.00	U	4.10	4.43	82.0	88.6	1	28.0-153			7.74	27
Vinyl chloride	5.00	U	5.80	5.93	116	119	1	10.0-160			2.22	27
Xylenes, Total	15.0	U	13.5	14.1	90.0	94.0	1	29.0-154			4.35	28
(S) Toluene-d8					*94.5*	*95.0*		*80.0-120*				
(S) 4-Bromofluorobenzene					*94.3*	*94.4*		*77.0-126*				
(S) 1,2-Dichloroethane-d4					*102*	*101*		*70.0-130*				

Method Blank (MB)

(MB) R3970226-3 09/06/23 20:04

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	U		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 disulfide	U		0.0962	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

Method Blank (MB)

(MB) R3970226-3 09/06/23 20:04

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Hexachloro-1,3-butadiene	U		0.337	1.00
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	*109*			*80.0-120*
(S) 4-Bromofluorobenzene	*101*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*102*			*70.0-130*

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

(LCS) R3970226-1 09/06/23 18:37 • (LCSD) R3970226-2 09/06/23 19:42

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	24.0	24.3	96.0	97.2	19.0-160			1.24	27
Acrolein	25.0	13.5	15.2	54.0	60.8	10.0-160			11.8	26
Acrylonitrile	25.0	21.0	20.7	84.0	82.8	55.0-149			1.44	20

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

(LCS) R3970226-1 09/06/23 18:37 • (LCSD) R3970226-2 09/06/23 19:42

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 %
Benzene	5.00	5.26	5.27	105	105	70.0-123			0.190	20
Bromobenzene	5.00	5.16	5.23	103	105	73.0-121			1.35	20
Bromodichloromethane	5.00	5.13	5.08	103	102	75.0-120			0.979	20
Bromoform	5.00	4.90	4.74	98.0	94.8	68.0-132			3.32	20
Bromomethane	5.00	4.75	4.64	95.0	92.8	10.0-160			2.34	25
n-Butylbenzene	5.00	4.98	4.60	99.6	92.0	73.0-125			7.93	20
sec-Butylbenzene	5.00	5.08	5.13	102	103	75.0-125			0.979	20
tert-Butylbenzene	5.00	5.22	5.15	104	103	76.0-124			1.35	20
Carbon disulfide	5.00	4.84	4.66	96.8	93.2	61.0-128			3.79	20
Carbon tetrachloride	5.00	4.95	5.10	99.0	102	68.0-126			2.99	20
Chlorobenzene	5.00	5.12	4.90	102	98.0	80.0-121			4.39	20
Chlorodibromomethane	5.00	4.85	4.61	97.0	92.2	77.0-125			5.07	20
Chloroethane	5.00	4.55	4.61	91.0	92.2	47.0-150			1.31	20
Chloroform	5.00	5.13	5.15	103	103	73.0-120			0.389	20
Chloromethane	5.00	3.67	3.84	73.4	76.8	41.0-142			4.53	20
2-Chlorotoluene	5.00	5.00	5.11	100	102	76.0-123			2.18	20
4-Chlorotoluene	5.00	4.90	5.06	98.0	101	75.0-122			3.21	20
1,2-Dibromo-3-Chloropropane	5.00	5.59	5.16	112	103	58.0-134			8.00	20
1,2-Dibromoethane	5.00	5.02	4.82	100	96.4	80.0-122			4.07	20
Dibromomethane	5.00	5.35	5.06	107	101	80.0-120			5.57	20
1,2-Dichlorobenzene	5.00	4.67	4.76	93.4	95.2	79.0-121			1.91	20
1,3-Dichlorobenzene	5.00	4.86	4.96	97.2	99.2	79.0-120			2.04	20
1,4-Dichlorobenzene	5.00	4.86	4.82	97.2	96.4	79.0-120			0.826	20
Dichlorodifluoromethane	5.00	4.70	4.85	94.0	97.0	51.0-149			3.14	20
1,1-Dichloroethane	5.00	4.70	4.75	94.0	95.0	70.0-126			1.06	20
1,2-Dichloroethane	5.00	4.80	4.75	96.0	95.0	70.0-128			1.05	20
1,1-Dichloroethene	5.00	4.96	4.85	99.2	97.0	71.0-124			2.24	20
cis-1,2-Dichloroethene	5.00	4.94	5.02	98.8	100	73.0-120			1.61	20
trans-1,2-Dichloroethene	5.00	5.37	4.91	107	98.2	73.0-120			8.95	20
1,2-Dichloropropane	5.00	5.07	5.00	101	100	77.0-125			1.39	20
1,1-Dichloropropene	5.00	5.49	5.43	110	109	74.0-126			1.10	20
1,3-Dichloropropane	5.00	5.43	5.23	109	105	80.0-120			3.75	20
cis-1,3-Dichloropropene	5.00	5.55	5.58	111	112	80.0-123			0.539	20
trans-1,3-Dichloropropene	5.00	5.37	5.32	107	106	78.0-124			0.935	20
2,2-Dichloropropane	5.00	6.07	6.31	121	126	58.0-130			3.88	20
Di-isopropyl ether	5.00	4.48	4.51	89.6	90.2	58.0-138			0.667	20
Ethylbenzene	5.00	5.01	4.88	100	97.6	79.0-123			2.63	20
Hexachloro-1,3-butadiene	5.00	6.01	5.88	120	118	54.0-138			2.19	20
Isopropylbenzene	5.00	5.19	5.03	104	101	76.0-127			3.13	20
p-Isopropyltoluene	5.00	5.24	5.40	105	108	76.0-125			3.01	20

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

(LCS) R3970226-1 09/06/23 18:37 • (LCSD) R3970226-2 09/06/23 19:42

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 %
2-Butanone (MEK)	25.0	22.9	22.9	91.6	91.6	44.0-160			0.000	20
Methylene Chloride	5.00	5.20	4.92	104	98.4	67.0-120			5.53	20
4-Methyl-2-pentanone (MIBK)	25.0	23.4	23.1	93.6	92.4	68.0-142			1.29	20
Methyl tert-butyl ether	5.00	5.52	5.52	110	110	68.0-125			0.000	20
Naphthalene	5.00	5.51	5.23	110	105	54.0-135			5.21	20
n-Propylbenzene	5.00	4.86	4.99	97.2	99.8	77.0-124			2.64	20
Styrene	5.00	4.68	4.77	93.6	95.4	73.0-130			1.90	20
1,1,1,2-Tetrachloroethane	5.00	4.77	4.63	95.4	92.6	75.0-125			2.98	20
1,1,2,2-Tetrachloroethane	5.00	5.04	5.24	101	105	65.0-130			3.89	20
1,1,2-Trichlorotrifluoroethane	5.00	6.07	6.03	121	121	69.0-132			0.661	20
Tetrachloroethene	5.00	4.96	4.85	99.2	97.0	72.0-132			2.24	20
Toluene	5.00	5.52	5.15	110	103	79.0-120			6.94	20
1,2,3-Trichlorobenzene	5.00	5.74	5.57	115	111	50.0-138			3.01	20
1,2,4-Trichlorobenzene	5.00	5.55	5.39	111	108	57.0-137			2.93	20
1,1,1-Trichloroethane	5.00	4.94	5.13	98.8	103	73.0-124			3.77	20
1,1,2-Trichloroethane	5.00	4.85	4.57	97.0	91.4	80.0-120			5.94	20
Trichloroethene	5.00	4.73	4.86	94.6	97.2	78.0-124			2.71	20
Trichlorofluoromethane	5.00	4.73	5.00	94.6	100	59.0-147			5.55	20
1,2,3-Trichloropropane	5.00	4.73	5.19	94.6	104	73.0-130			9.27	20
1,2,4-Trimethylbenzene	5.00	5.06	5.01	101	100	76.0-121			0.993	20
1,2,3-Trimethylbenzene	5.00	5.11	4.88	102	97.6	77.0-120			4.60	20
1,3,5-Trimethylbenzene	5.00	5.03	4.90	101	98.0	76.0-122			2.62	20
Vinyl chloride	5.00	4.24	4.32	84.8	86.4	67.0-131			1.87	20
Xylenes, Total	15.0	15.4	14.7	103	98.0	79.0-123			4.65	20
(S) Toluene-d8				*109*	*107*	*80.0-120*				
(S) 4-Bromofluorobenzene				*106*	*102*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*103*	*104*	*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.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
C5	The reported concentration is an estimate. The continuing calibration standard associated with this data responded high. Data is likely to show a high bias concerning the result.
J	The identification of the analyte is acceptable; the reported value is an estimate.

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.

B131

Agency, Authorized Purchaser or Agent: Oregon DEQ

Send Lab Report To: Mark Pugh
Address: Department of Environmental Quality
700 NE Multnomah St, Suite 600
Portland, OR 97232

E-mail: pugh.mark@deq.state.or.us

Contract Laboratory Name: Pace National

Lab Batch #:

Invoice To: ODEQ/Business Office
Address: 700 NE Multnomah Street, Suite 600 Portland, OR. 97232

Tel. #: (800) 452-4011

Lab Selection Criteria:
- ☐ Proximity (if TAT < 48 hrs)
- ☐ Prior work on same project
- ☒ Cost (for anticipated analyses)
- ☐ Other labs disqualified or unable to perform requested services
- ☐ Emergency work

Turn Around Time:
- ☒ 10 days (std.)
- ☐ 5 days
- ☐ 72 hours
- ☐ 48 hours
- ☐ 24 hours
- ☐ Other

Project Name: **Tigard Cleaners**
Project #: **2326-01**

L1651306

Sample Preservative

HCl	NONE								

Requested Analyses

Sample ID#	Collection Date/Time	Matrix	Number of Containers	VOCs by 8260B	Total Organic Carbon – SW9060/415.1/SM -5310B									Comments
MW-1	8/28/23 1735	W	4	X	X									-01
MW-2	8/28/23 1221	W	4	X	X									-02
MW-2i	8/28/23 1502	W	3	X										-03
MW-3	8/28/23 1120	W	3	X										-04
MW-4	8/28/23 1314	W	4	X	X									-05
MW-5	8/28/23 1413	W	4	X	X									-06
MW-6	8/28/23 1818	W	4	X	X									-07
MW-6i	8/28/23 1853	W	3	X										-08
MW-7	8/28/23 1642	W	3	X										-09
DUP-1	8/28/23 1314	W	3	X										-10

Notes: Report Results to: MStevens@apexcos.com; ~~Kelsi.Evans@apexcos.com~~; ~~Paula.Richardson@apexcos.com~~; pugh.mark@deq.state.or.us
carmen.owens@apexcos.com

Relinquished By: Alex Evenden	Agency/Agent: Apex Companies	Received By:	Agency: GWRS 4.5+0=4.5
Signature:	Time & Date: 8/29/23 1030	Signature:	Time & Date: 08/30/23 0900
Relinquished By:	Agency/Agent:	Received By:	Agency/Agent:
Signature:	Time & Date:	Signature:	Time & Date:

THIS PURCHASE IS SUBMITTED PURSUANT TO STATE OF OREGON SOLICITATION #**102-1098-07** AND PRICE AGREEMENT # **8903**. THE PRICE AGREEMENT INCLUDING CONTRACT TERMS AND CONDITIONS AND SPECIAL CONTRACT TERMS AND CONDITIONS (T'S &C'S) CONTAINED IN THE PRICE AGREEMENT ARE HEREBY INCORPORATED BY REFERENCE AND SHALL APPLY TO THIS PURCHASE AND SHALL TAKE PRECEDENCE OVER ALL OTHER CONFLICTING T'S AND C'S, EXPRESS OR IMPLIED.

Sample Receipt Checklist

COC Seal Present/Intact: __Y__N
COC Signed/Accurate: __Y__N
Bottles arrive intact: __Y__N
Correct bottles used: __Y__N
Sufficeient volume sent: __Y__N
RA Screen <0.5 mR/hr: __Y__N

If Applicable
VOA Zero Headspace: __Y__N
Pres. Correct/Check: __Y__N

Appendix C

Historical Data

Table C-1
Groundwater Elevation Data
Tigard Cleaners
Tigard, Oregon

Well Identification	Date	Screened Interval (feet bgs)	Top of Casing (feet MSL)	Depth to Water (feet bgs)	Depth to Product (feet bgs)	Product Thickness (feet bgs)	Groundwater Elevation (feet MSL)
Shallow Wells							
MW-1							
	6/18/2018	7-17	154.054	6.78	--	--	147.27
	9/25/2018			6.86	--	--	147.19
	2/7/2019			5.32	--	--	148.73
	5/30/2019			4.78	--	--	149.27
	9/24/2019			5.08	--	--	148.97
	5/27/2020			7.32	--	--	146.73
	10/16/2020			5.30	--	--	148.75
	6/7/2021			7.41	--	--	146.64
	10/20/2021			5.03	--	--	149.02
	10/19/2022			4.90	--	--	149.15
	2/21/2023			3.70	--	--	150.35
	8/28/2023			4.94	--	--	149.11
MW-2							
	6/18/2018	7-17	154.85	4.41	--	--	150.44
	9/25/2018			4.35	--	--	150.50
	2/7/2019			3.65	--	--	151.20
	5/30/2019			3.59	--	--	151.26
	9/24/2019			3.77	--	--	151.08
	5/27/2020			4.12	--	--	150.73
	10/16/2020			4.66	--	--	150.19
	6/7/2021			4.24	--	--	150.61
	10/20/2021			3.11	--	--	151.74
	10/19/2022			7.26	--	--	147.59
	2/21/2023			8.62	--	--	146.23
	8/28/2023			5.25			149.60
MW-3							
	6/18/2018	7-17	155.293	5.91	--	--	149.38
	9/25/2018			6.60	--	--	148.69
	2/7/2019			5.80	--	--	149.49
	5/30/2019			5.48	--	--	149.81
	9/24/2019			5.76	--	--	149.53
	5/27/2020			5.40	--	--	149.89
	10/16/2020			5.79	--	--	149.50
	6/7/2021			5.80	--	--	149.49
	10/20/2021			5.87	--	--	149.42
	10/19/2022			6.27	--	--	149.02
	2/21/2023			5.17	--	--	150.12
	8/28/2023			6.73			148.56

Please see notes at end of table.

Table C-1
Groundwater Elevation Data
Tigard Cleaners
Tigard, Oregon

Well Identification	Date	Screened Interval (feet bgs)	Top of Casing (feet MSL)	Depth to Water (feet bgs)	Depth to Product (feet bgs)	Product Thickness (feet bgs)	Groundwater Elevation (feet MSL)
MW-4							
	6/18/2018	7-17	155.54	5.61	--	--	149.93
	9/25/2018			5.87	--	--	149.67
	2/7/2019			5.33	--	--	150.21
	5/30/2019			5.27	--	--	150.27
	9/24/2019			5.30	--	--	150.24
	5/27/2020			5.29	--	--	150.25
	10/16/2020			5.40	--	--	150.14
	6/7/2021			5.61	--	--	149.93
	10/20/2021			5.48	--	--	150.06
	10/19/2022			5.70	--	--	149.84
	2/21/2023			5.19	--	--	150.35
	8/28/2023			6.09			149.45
MW-5							
	6/18/2018	7-17	154.688	4.62	--	--	150.07
	9/25/2018			4.83	--	--	149.86
	2/7/2019			4.32	--	--	150.37
	5/30/2019			4.30	--	--	150.39
	9/24/2019			4.50	--	--	150.19
	5/27/2020			4.31	--	--	150.38
	10/16/2020			4.58	--	--	150.11
	6/7/2021			4.48	--	--	150.21
	10/20/2021			4.40	--	--	150.29
	10/19/2022			4.80	--	--	149.89
	2/21/2023			4.28	--	--	150.41
	8/28/2023			4.91			149.78
MW-6							
	6/18/2018	10-20	153.319	8.55	--	--	144.77
	9/25/2018			6.08	--	--	147.24
	2/7/2019			6.65	--	--	146.67
	5/30/2019			10.79	--	--	142.53
	9/24/2019			10.33	--	--	142.99
	5/27/2020			11.40	--	--	141.92
	10/16/2020			5.29	--	--	148.03
	6/7/2021			9.33	--	--	143.99
	10/20/2021			9.42	--	--	143.90
	10/19/2022			4.82	--	--	148.50
	2/21/2023			7.02	--	--	146.30
	8/28/2023			1.80			151.52

Please see notes at end of table.

Table C-1
Groundwater Elevation Data
Tigard Cleaners
Tigard, Oregon

Well Identification	Date	Screened Interval (feet bgs)	Top of Casing (feet MSL)	Depth to Water (feet bgs)	Depth to Product (feet bgs)	Product Thickness (feet bgs)	Groundwater Elevation (feet MSL)
MW-7							
	6/18/2018	10-20	153.992	4.39	--	--	149.60
	9/25/2018			5.00	--	--	148.99
	2/7/2019			4.27	--	--	149.72
	5/30/2019			5.31	--	--	148.68
	9/24/2019			4.64	--	--	149.35
	5/27/2020			6.52	--	--	147.47
	10/16/2020			4.50	--	--	149.49
	6/7/2021			6.16	--	--	147.83
	10/20/2021			4.94	--	--	149.05
	10/19/2022			4.85	--	--	149.14
	2/21/2023			5.00	--	--	148.99
	8/28/2023			4.52			149.47
Intermediate Wells							
MW-2i							
	6/18/2018	33.25-43.25	154.21	5.13	--	--	149.08
	9/25/2018			4.70	--	--	149.51
	2/7/2019			4.44	--	--	149.77
	5/30/2019			7.60	--	--	146.61
	9/24/2019			5.02	--	--	149.19
	5/27/2020			7.42	--	--	146.79
	10/16/2020			4.93	--	--	149.28
	6/7/2021			4.27	--	--	149.94
	10/20/2021			6.20	--	--	148.01
	10/19/2022			4.29	--	--	149.92
	2/21/2023			7.03	--	--	147.18
	8/28/2023			5.94			148.27
MW-6i							
	6/18/2018	24.58-34.58	153.17	4.23	--	--	148.94
	9/25/2018			4.19	--	--	148.98
	2/7/2019			5.74	--	--	147.43
	5/30/2019			7.73	--	--	145.44
	9/24/2019			15.18	--	--	137.99
	5/27/2020			20.41	--	--	132.76
	10/16/2020			8.12	--	--	145.05
	6/7/2021			6.21	--	--	146.96
	10/20/2021			7.90	--	--	145.27
	10/19/2022			8.23	--	--	144.94
	2/21/2023			3.81	--	--	149.36
	8/28/2023			12.64			140.53

Notes:

1. bgs = below ground surface.
2. feet MSL = feet above mean sea level.
3. -- = Data not available or no product was measured.

Table C-2
Groundwater Analytical Results for Volatile Organic Compounds
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Analyte Concentration in µg/L					Total Molar VOCs in µmol/L
		PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	
Upgradient							
Grab GW SOUTH							
	1/28/2019	<1.00	<1.00	**0.64**	<1.00	**<1.00**	0.027
MW-5							
	8/31/2017	<1.00	<1.00	**1.37**	<1.00	**0.984 J**	0.042 J
	10/9/2017	<1.00	<1.00	**1.34**	<1.00	**0.509 J**	0.034 J
	6/18/2018	<1.00	<1.00	**1.19**	<1.00	**0.389 J**	0.030 J
	9/25/2018	<1.00	<1.00	**0.640 J**	<1.00	**0.265 J**	0.023 J
	2/5/2019	<1.00	<1.00	**1.21**	<1.00	**0.980 J**	0.040 J
	5/30/2019	<1.00	<1.00	**2.18**	<1.00	**0.501 J**	0.042 J
	9/24/2019	<1.00	<1.00	**0.777 J**	<1.00	<1.00	0.028 J
	5/27/2020	<1.00	<1.00	**0.614 J**	<1.00	**0.239 J**	0.022 J
	10/16/2020	<1.00	<1.00	**0.463 J**	<1.00	<1.00	0.025 J
	6/7/2021	<1.00	<1.00	**0.188 J**	<1.00	**0.561 J**	0.023 J
	10/20/2021	<1.00	**0.261 J**	**9.06**	<1.00	**0.433 J+**	0.111 J
	10/18/2022	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
	2/21/2023	<1.00	<1.00	**0.466 J**	<1.00	**0.439 J**	0.024 J
	8/28/2023	<1.00	<1.00	**2.230 J**	<1.00	<1.00	0.043 J
Source Area							
MW-1							
	8/31/2017	**58,000**	**71,700**	**89,300**	**574**	**1,720**	1,850
	10/9/2017	**53,300**	**61,500**	**72,200**	**536**	**1,750**	1,568
	6/18/2018	**64,100**	**68,700**	**61,500**	**455 J**	**1,130**	1,567
	9/25/2018	**42,800**	**95,900**	**122,000**	**781**	**2,160**	2,289
	2/7/2019	**2,540**	**23,200**	**308,000**	**1,290**	**7620 J**	3,504
	5/30/2019	**3,230**	**9,040**	**375,000**	**1930 J**	**12,800**	4,181
	9/24/2019	**10,500**	**25,400**	**439,000**	**2,190**	**36,000**	5,384
	5/27/2020	**10,000**	**12500 J**	**536,000**	<20,000	**58,700**	6,727
	10/16/2020	**11,000**	**34,200**	**384,000**	<20,000	**15,800 J**	4,644
	6/7/2021	<20,000	<20,000	**452,000**	<20,000	**90,000 J+**	6,342
	10/20/2021	**9,940 J**	**21,200**	**279,000**	<20,000	**18,700 J+**	3,502
	10/19/2022	<500	<500	**217,000**	**967**	**37,200**	2,847
	2/21/2023	<500	<500	**468,000**	**4,590**	**30,100**	5,360
	8/28/2023	**19,200**	<20,000	**441,000**	<20,000	<20,000	5,004
MW-3							
	8/31/2017	**4,000**	**1,890**	**2,000**	**5.61**	**175**	62.0
	10/9/2017	**1,700**	**1,090**	**1,190**	**4.49**	**134**	33.0
	6/19/2018	**1,110**	**661**	**2,740**	**14.3**	**365**	46.0
	9/25/2018	**1,520**	**591**	**3,350**	**106**	**431**	56.2
	2/5/2019	**7,160**	**723**	**13,000**	**40.6**	**1,550**	208
	5/30/2019	**1,220**	**468**	**10,700**	**41.3 J**	**1,410**	144
	9/24/2019	**214**	**147**	**1,680**	**4.89 J**	**94.9**	21.3
	5/27/2020	**726**	**385**	**6,410**	**32.4**	**818**	86.9
	10/16/2020	**1,740**	**1,060**	**5,490**	<100	**703**	87.0
	6/7/2021	**2,620**	**1,350**	**5,630**	**24.1 J**	**1020 J+**	101
	10/20/2021	**1,560**	**821**	**3,150**	<100	**467 J+**	56.1
	10/19/2022	<100	<100	**2,520**	<100	**92.2 J**	28.7
	2/21/2023	**36.5 J**	**150**	**7,510**	**25.6**	**938**	94.1
	8/28/2023	**73.7 J**	**117**	**658**	**4.7**	**205**	11.5

Please see notes at end of table.

Table C-2
Groundwater Analytical Results for Volatile Organic Compounds
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Analyte Concentration in µg/L					Total Molar VOCs in µmol/L
		PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	
Upgradient							
MW-4							
	8/31/2017	**60,600**	**35,400**	**45,200**	**140**	**7,680**	**1,225**
	10/9/2017	**44,000**	**21,900**	**24,400**	**84.1**	**4,930**	**763**
	6/18/2018	**55,300**	**37,100**	**62,100**	**314**	**6,090**	**1,357**
	9/25/2018	**9,790**	**5,290**	**86400 J**	<1000	**3630 J**	**1,054**
	2/5/2019	**23,800**	**7,980**	**253,000**	**657**	**24,100**	**3,206**
	5/30/2019	**16,400**	**9,660**	**198,000**	<2000	**22,700**	**2,588**
	9/24/2019	**21,300**	**5,460**	**162,000**	<2000	**21,200**	**2,191**
	5/27/2020	**16,800**	**8,830**	**156,000**	<2000	**32,200**	**2,303**
	10/16/2020	**14,800**	**5,200**	**117,000**	<2000	**26,500**	**1,770**
	6/7/2021	**13,300**	**5,890**	**74,200**	<2000	**28000 J+**	**1,349**
	10/20/2021	**27,400**	**9,890**	**64,900**	<2000	**21,700**	**1,267**
	10/19/2022	**78,000**	**11,500**	**76,400**	<2000	**13,000**	**1,564**
	2/21/2023	**7,410**	**1,990**	**68,100**	<2000	**17,800**	**1,057**
	8/28/2023	**5,050**	**1,610**	**75,200**	<2000	**26,700**	**1,256**
Downgradient							
MW-2							
	8/31/2017	<1.00	**1.14**	**19.7**	<1.00	**6.78**	**0.329**
	10/9/2017	**1.14**	**4.45**	**20.9**	<1.00	**4.05**	**0.326**
	6/19/2018	**0.613 J**	**0.605 J**	**17.7**	<1.00	**12.4**	**0.394**
	9/25/2018	<1.00	<1.00	**43.3**	<1.00	**28.2**	**0.910**
	2/7/2019	<1.00	<1.00	**74.9**	**0.438 J**	**49.6**	**1.58**
	5/30/2019	<1.00	<1.00	**84.1**	**0.608 J**	**52.0**	**1.71**
	9/24/2019	<1.00	<1.00	**7.90**	<1.00	**3.77**	**0.154**
	5/27/2020	<1.00	<1.00	**71.6**	**0.498 J**	**62.9**	**1.76**
	10/16/2020	<1.00	<1.00	**5.45**	<1.00	**3.21**	**0.120**
	6/7/2021	<1.00	<1.00	**62.8**	**0.367 J**	**79.0 J+**	**1.92**
	10/20/2021	<1.00	<1.00	**32.2**	**0.166 J**	**34.2 J+**	**0.888**
	10/18/2022	<1.00	<1.00	**8.55**	**0.287 J**	**2.88**	**0.144**
	2/21/2023	<1.00	**0.229 J**	**57.1**	**0.183 J**	**12.0**	**0.788**
	8/28/2023	<1.00	<1.00	**5.7**	<1.0	**12.4**	**0.269**
MW-2i							
	6/19/2018	**365**	**5,800**	**40,300**	**369**	**64.9**	**467**
	9/25/2018	<100	<100	**48,300**	**395**	**4,130**	**569**
	2/7/2019	**0.507 J**	**1.12**	**51,800**	**40.9**	**7,200**	**650**
	5/30/2019	<500	<500	**42,300**	<500	**9,430**	**593**
	9/24/2019	<500	<500	**43,500**	<500	**10,300**	**620**
	5/27/2020	<500	<500	**20,000**	<500	**1,620**	**238**
	10/16/2020	<500	<500	**36,500**	<500	**9,610**	**536**
	6/7/2021	<500	<500	**31,100**	<500	**13,500 J+**	**543**
	10/20/2021	<500	<500	**19,600**	<500	**4,820 J+**	**285**
	10/19/2022	<500	<500	**34,000**	<500	**8,700**	**496**
	2/21/2023	<100	<100	**12,600**	<100	**230**	**135**
	8/28/2023	**368**	<500	**16,900**	<500	**465**	**188**
MW-6							
	8/31/2017	**4,740**	**31,000**	**25,800**	**126**	**2,170**	**567**
	10/9/2017	**3,690**	**28,700**	**22,800**	**141**	**2,490**	**517**
	6/18/2018	<200	**234**	**35,500**	**156 J**	**1,860**	**400**

Please see notes at end of table.

Table C-2
Groundwater Analytical Results for Volatile Organic Compounds
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Analyte Concentration in µg/L					Total Molar VOCs in µmol/L
		PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	
Upgradient							
MW-6	9/25/2018	<200	<200	**30,100**	**123 J**	**8,800**	454
	2/7/2019	<1.00	**4.76**	**43,600**	**152**	**7,660**	574
	5/30/2019	<250	<250	**28,900**	**138 J**	**5,120**	383
	9/24/2019	<250	<250	**26,300**	**117 J**	**8,800**	415
	5/27/2020	<250	<250	**8,070**	<250	**5840 J**	180
	10/16/2020	<250	<250	**5,550**	<250	**4,460**	132
	6/7/2021	<250	<250	**921**	<250	**1060 J+**	29.5
	10/20/2021	<25.0	**9.65 J**	**1,970**	**5.35 J**	**879**	34.6
	10/18/2022	<25.0	<25.0	**1,320**	**5.94 J**	**906**	28.3
	2/21/2023	Stormwater flowing into well monument during sampling, no sample collected					
	8/28/2023	<25.0	<25.0	**218**	<25.0	**417**	9.22
MW-6i							
	6/18/2018	**1.26**	**1.44**	**2,020**	**10.9**	**91.4**	22.4
	9/25/2018	<1.00	<1.00	**0.538 J**	**3.15**	**1.24**	0.065
	2/7/2019	<1.00	<1.00	**1.07**	**1.69**	**1.51**	0.059
	5/30/2019	<1.00	<1.00	**0.696 J**	**2.35**	**1.73**	0.066
	9/24/2019	<1.00	<1.00	**115**	**1.77**	**148**	3.58
	5/27/2020	<1.00	0.5	**9.42**	**0.601 J**	**1.23 J**	0.130
	10/16/2020	<1.00	<1.00	**1.31**	**0.201 J**	**2.29**	0.059
MW-6i	6/7/2021	<1.00	<1.00	**0.818 J**	**0.336 J**	<1.00	0.027
	10/20/2021	<1.00	<1.00	**0.779 J**	**0.232 J**	<1.00	0.025
	10/18/2022	<1.00	<1.00	**0.950 J**	**0.236 J**	<1.00	0.027
	2/21/2023	<1.00	<1.00	**0.257 J**	<1.00	<1.00	0.023
	8/28/2023	<1.00	<1.00	**0.509 J**	<1.00	<1.00	0.025
MW-7							
	8/31/2017	**1.59**	**45.0**	**6,710**	**65.8**	**2,120**	104
	10/9/2017	<500	<500	**13,000**	**300 J+**	**5,580**	230
	6/19/2018	<1.00	**23.0**	**11,800**	**61.5**	**7,790**	247
	9/25/2018	<100	<100	**10,500**	**48.8 J**	**5,930**	204
	2/7/2019	<1.00	<1.00	**5,350**	<1.00	**4,990**	135
	5/30/2019	<25.0	<25.0	**661**	<25.0	**715**	18.558
	9/24/2019	<25.0	<25.0	**273**	<25.0	**325**	8.316
	5/27/2020	<25.0	<25.0	**882**	**4.89 J**	**863 J**	23.127
	10/16/2020	<25.0	<25.0	**2,290**	<25.0	**2,110**	57.682
	6/7/2021	<5.00	<5.00	**229**	**1.41 J**	**336 J+**	7.787
	10/20/2021	<5.00	<5.00	**101**	**1.15 J**	**259 J+**	5.232
	10/18/2022	<5.00	<5.00	**45.9**	<5.00	**46.0**	1.269
	2/21/2023	<1.00	<1.00	**11.2**	**0.420 J**	**11.4 J**	0.309
	8/28/2023	<1.00	<1.00	**7.22**	**0.563 J**	**5.4 J**	0.173

Notes:
µg/L = micrograms per liter.
PCE = Tetrachloroethene
TCE = Trichloroethene
DCE = Dichloroethene
Bold values indicate concentration detected above the method detection limit.
Shaded values indicate concentrations detected above one or more applicable RBCs.
< = Concentration was not detected above the shown minimum reporting limit.
J = The reported concentration is an estimated quantity.
J+ = Result is an estimated concentration and may be biased high.
J- = Result is an estimated concentration and may be biased low.

Table C-3
Groundwater Analytical Results for Natural Attenuation Parameters
Tigard Cleaners
Tigard, Oregon

Sample ID:	MW-5										
Sample Date:	8/31/2017	6/18/2018	2/5/2019	9/24/2019	5/27/2020	10/16/2020	6/7/2021	10/20/2021	10/18/2022	2/21/2023	8/28/2023
	Concentration in µg/L										
Total Metals											
Calcium	**55,000**	--	--	--	--	--	--	--	--	--	--
Iron	**23,400**	--	--	--	--	--	--	--	--	--	--
Magnesium	**15,200**	--	--	--	--	--	--	--	--	--	--
Manganese	**3,670**	--	--	--	--	--	--	--	--	--	--
Potassium	**5,070**	--	--	--	--	--	--	--	--	--	--
Dissolved Metals											
Calcium	**59,000**	--	--	--	--	--	--	--	--	--	--
Iron	<100	--	--	--	--	--	--	--	--	--	--
Magnesium	**17,000**	--	--	--	--	--	--	--	--	--	--
Manganese	**3,860**	--	--	--	--	--	--	--	--	--	--
Potassium	**5,650**	--	**4,360**	--	--	--	--	--	--	--	--
Wet Chemistry											
Hardness	**190,000**	--	--	--	--	--	--	--	--	--	--
Alkalinity	**231,000**	--	**273,000**	--	--	--	--	--	--	--	--
Chloride	**3,610**	--	**3,560**	**4,720**	--	--	--	--	--	--	--
Nitrate	<100	--	<100	<100	--	--	--	--	--	--	--
Nitrite	<100	--	<100	<100	--	--	--	--	--	--	--
Sulfate	**177** J	--	<5,000	**6,210**	--	--	--	--	--	--	--
Orthophosphate	<25	--	**124** J	**233**	--	--	--	--	--	--	--
Ammonia Nitrogen	**2,510**	--	**2,550**	**2,090**	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	<10,000	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand (BOD)	**7,400**	--	--	--	--	--	--	--	--	--	--
Total Organic Carbon (TOC)	**3,530**	**2,810**	**3,470**	**18,900**	**6,440**	**18,400**	**6,620**	**5,310**	<1000	**5,180**	**8,270**
Dissolved Organic Carbon (DOC)	**3,560**	**2,830**	**3,010**	--	--	--	--	--	--	--	--
Volatile Organic Compounds											
Methane	**7,140**	--	**11,600**	**4,830**	--	--	--	--	--	--	--
Ethane	**13.1**	--	**16.8**	<13.0	--	--	--	--	--	--	--
Ethene	<13.0	--	<13.0	<13.0	--	--	--	--	--	--	--

Please see notes at end of table.

Table C-3
Groundwater Analytical Results for Natural Attenuation Parameters
Tigard Cleaners
Tigard, Oregon

Sample ID:	MW-4										
Sample Date:	8/31/2017	6/18/2018	2/5/2019	9/24/2019	5/27/2020	10/16/2020	6/7/2021	10/21/2021	10/19/2022	2/21/2023	8/28/2023
	Concentration in µg/L										
Total Metals											
Calcium	**84,900**	--	--	--	--	--	--	--	--	--	--
Iron	**86,800**	--	--	--	--	--	--	--	--	--	--
Magnesium	**25,800**	--	--	--	--	--	--	--	--	--	--
Manganese	**7,100**	--	--	--	--	--	--	--	--	--	--
Potassium	**4,170**	--	--	--	--	--	--	--	--	--	--
Dissolved Metals											
Calcium	**84,400**					--	--	--	--	--	--
Iron	**18,000**	--	--	--	--	--	--	--	--	--	--
Magnesium	**26,200**	--	--	--	--	--	--	--	--	--	--
Manganese	**7,040**	--	--	--	--	--	--	--	--	--	--
Potassium	**4,500**	--	--	--	--	--	--	--	--	--	--
Wet Chemistry											
Hardness	**308,000**	--	--	--	--	--	--	--	--	--	--
Alkalinity	**101,000**	--	--	--	--	--	--	--	--	--	--
Chloride	**206,000**	--	--	**424,000**	--	--	--	--	--	--	--
Nitrate	<100	--	--	<100	--	--	--	--	--	--	--
Nitrite	<100	--	--	<100	--	--	--	--	--	--	--
Sulfate	**3,260** J	--	--	<5000	--	--	--	--	--	--	--
Orthophosphate	<25	--	--	**460**	--	--	--	--	--	--	--
Ammonia Nitrogen	**3,010**	--	--	**2,830**	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	**29,600**	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand (BOD)	**6,300**	--	--	--	--	--	--	--	--	--	--
Total Organic Carbon (TOC)	**6,320**	**209,000**	**64,500**	**46,000**	**25,600**	**28,200**	**25,300**	**19,500**	**111,000** J	**43,900**	**45,300**
Dissolved Organic Carbon (DOC)	**5,960**	**191,000**	**61,300**	--	--	--	--	--	--	--	--
Volatile Organic Compounds											
Methane	**11,000**	--	--	**14,900**	--	--	--	--	--	--	--
Ethane	**4,130**	--	--	**755**	--	--	--	--	--	--	--
Ethene	**3,750**	--	--	**3,720**	--	--	--	--	--	--	--

Please see notes at end of table.

Table C-3
Groundwater Analytical Results for Natural Attenuation Parameters
Tigard Cleaners
Tigard, Oregon

	MW-1										
Sample Date:	8/31/2017	6/18/2018	2/7/2019	9/24/2019	5/27/2020	10/16/2020	6/7/2021	10/20/2021	10/19/2022	2/21/2023	8/28/2023
	Concentration in µg/L										
Total Metals											
Calcium	**55,300**	--	--	--	--	--	--	--	--	--	--
Iron	**9,600**	--	--	--	--	--	--	--	--	--	--
Magnesium	**17,100**	--	--	--	--	--	--	--	--	--	--
Manganese	**7,230**	--	--	--	--	--	--	--	--	--	--
Potassium	**1,860**	--	--	--	--	--	--	--	--	--	--
Dissolved Metals											
Calcium	**56,000**	--	--	--	--	--	--	--	--	--	--
Iron	**172**	--	--	--	--	--	--	--	--	--	--
Magnesium	**17,600**	--	--	--	--	--	--	--	--	--	--
Manganese	**7,600**	--	--	--	--	--	--	--	--	--	--
Potassium	**1,870**	--	**3,040**	--	--	--	--	--	--	--	--
Wet Chemistry											
Hardness	**198,000**	--	--	--	--	--	--	--	--	--	--
Alkalinity	**113,000**	--	**104,000**	--	--	--	--	--	--	--	--
Chloride	**92,200***	--	**357,000**	**476,000**	--	--	--	--	--	--	--
Nitrate	--	--	<100	<100	--	--	--	--	--	--	--
Nitrite	--	--	<100	<100	--	--	--	--	--	--	--
Sulfate	**5,310***	--	**4,160** J	**3,830** J	--	--	--	--	--	--	--
Orthophosphate	**22.0***	--	**399**	**243**	--	--	--	--	--	--	--
Ammonia Nitrogen	**1,010***	--	**1,100**	**1,780**	--	--	--	--	--	--	--
Chemical Oxygen Demand (COD)	**55,500**	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand (BOD)	<3,330	--	--	--	--	--	--	--	--	--	--
Total Organic Carbon (TOC)	**4,870***	**13,100**	**11,900**	**15,800**	**15,900**	**11,500**	**32,400**	**11,700**	**129,000** J	**18,800**	**31,600**
Dissolved Organic Carbon (DOC)	**11,900**	**7,280**	**11,100**	--	--	--	--	--	--	--	--
Volatile Organic Compounds											
Methane	--	--	**828**	**3,020**	--	--	--	--	--	--	--
Ethane	--	--	**56.8**	**90.4**	--	--	--	--	--	--	--
Ethene	--	--	**447**	**1,550**	--	--	--	--	--	--	--

Please see notes at end of table.

Table C-3
Groundwater Analytical Results for Natural Attenuation Parameters
Tigard Cleaners
Tigard, Oregon

	MW-2			MW-6							
Sample Date:	10/19/2022	2/21/2023	8/28/2023	8/31/2017	6/18/2018	2/7/2019	9/24/2019	5/27/2020	10/16/2020	6/7/2021	10/20/2021
	Concentration in µg/L										
Total Metals											
Calcium	--	--	--	**91,300**	--	--	--	--	--	--	--
Iron	--	--	--	**139**	--	--	--	--	--	--	--
Magnesium	--	--	--	**34,700**	--	--	--	--	--	--	--
Manganese	--	--	--	**3,630**	--	--	--	--	--	--	--
Potassium	--	--	--	**4,750**	--	--	--	--	--	--	--
Dissolved Metals											
Calcium	--	--	--	**99,500**	--	--	--	--	--	--	--
Iron	--	--	--	<100	--	--	--	--	--	--	--
Magnesium	--	--	--	**39,300**	--	--	--	--	--	--	--
Manganese	--	--	--	**3,910**	--	--	--	--	--	--	--
Potassium	--	--	--	**5,010**	--	**3,850**	--	--	--	--	--
Wet Chemistry											
Hardness	--	--	--	**348,000**	--	--	--	--	--	--	--
Alkalinity	--	--	--	**303,000**	--	**315,000**	--	--	--	--	--
Chloride	--	--	--	**92,000**	--	**105,000**	**147,000**	--	--	--	--
Nitrate	--	--	--	<100	--	<100	<100	--	--	--	--
Nitrite	--	--	--	<100	--	<100	<100	--	--	--	--
Sulfate	--	--	--	**1,310** J	--	<5000	<5000	--	--	--	--
Orthophosphate	--	--	--	**331**	--	**955**	**45.0**	--	--	--	--
Ammonia Nitrogen	--	--	--	**1,080** J	--	**1,080**	**1,310**	--	--	--	--
Chemical Oxygen Demand (COD)	--	--	--	**22,000**	--	--	--	--	--	--	--
Biochemical Oxygen Demand (BOD)	--	--	--	<3,330	--	--	--	--	--	--	--
Total Organic Carbon (TOC)	<1000	**44,000**	**46,300**	**3,940**	**8,670**	**5,570**	**14,700**	**20,200**	**6,520**	**4,310**	**4,620**
Dissolved Organic Carbon (DOC)	--	--	--	**5,030**	**6,530**	**4,170**	--	--	--	--	--
Volatile Organic Compounds											
Methane	--	--	--	**1,310**	--	**10,900**	**13,000**	--	--	--	--
Ethane	--	--	--	**62.5**	--	**174**	**246**	--	--	--	--
Ethene	--	--	--	**797**	--	**903**	**4,150**	--	--	--	--

Please see notes at end of table.

Table C-3
Groundwater Analytical Results for Natural Attenuation Parameters
Tigard Cleaners
Tigard, Oregon

	MW-6		MW-6I	
Sample Date:	10/18/2022	8/28/2023	6/18/2018	2/7/2019
	Concentration in µg/L			
Total Metals				
Calcium	--	--	--	--
Iron	--	--	--	--
Magnesium	--	--	--	--
Manganese	--	--	--	--
Potassium	--	--	--	--
Dissolved Metals				
Calcium	--	--	--	--
Iron	--	--	--	--
Magnesium	--	--	--	--
Manganese	--	--	--	--
Potassium	--	--	--	--
Wet Chemistry				
Hardness	--	--	--	--
Alkalinity	--	--	--	--
Chloride	--	--	--	--
Nitrate	--	--	--	--
Nitrite	--	--	--	--
Sulfate	--	--	--	--
Orthophosphate	--	--	--	--
Ammonia Nitrogen	--	--	--	--
Chemical Oxygen Demand (COD)	--	--	--	--
Biochemical Oxygen Demand (BOD)	--	--	--	--
Total Organic Carbon (TOC)	<1000	**6,580**	**4,880**	**12,300**
Dissolved Organic Carbon (DOC)	--	--	**5,230**	**8,670**
Volatile Organic Compounds				
Methane	--	--	--	--
Ethane	--	--	--	--
Ethene	--	--	--	--

Notes:

µg/L = micrograms per liter.

Bold values indicate concentration detected above the method detection limit.

< = Concentration was not detected above the shown minimum reporting limit.

-- = Not analyzed or not available.

J = The reported concentration is an estimated quantity.

Table C-4
Ambient Air Analytical Results
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Analyte Concentration in µg/m3				
		PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
Main Building						
AMB-1 / TC-1						
	12/12/2016	**948**	**363**	**0.274**	<0.0793	<0.0511
	8/31/2017	**41.5**	**17.7**	**4.47**	<0.793	<0.511
	10/9/2017	**1,070**	**11.3**	<0.793	<0.793	<0.511
	12/4/2017	**420**	**14.0**	<0.793	<0.793	<0.511
	6/19/2018	**85.5**	**8.17**	<0.793	<0.793	<0.511
	2/5/2019	**735**	**149**	<0.793	<0.793	<0.511
AMB-2 / TC-2						
	12/12/2016	**411**	**425**	**0.186**	<0.0793	<0.0511
	8/31/2017	**31.7**	**3.67**	<0.793	<0.793	<0.511
	10/9/2017	**495**	**7.05**	<0.793	<0.793	<0.511
	12/4/2017	**291**	**9.98**	<0.793	<0.793	<0.511
	6/19/2018	**66.5**	**3.14**	<0.793	<0.793	<0.511
	2/5/2019	**362**	**82.10**	**6.78**	<0.793	**0.688**
Back Building						
AMB-3 / TC-3						
	12/12/2016	**297**	**24.60**	**0.116**	<0.0793	<0.0511
	8/31/2017	**3,480**	**5.97**	<19.8	<0.793	<0.511
	10/9/2017	**4,900**	**7.84**	<0.793	<0.793	<0.511
	6/19/2018	**921**	**9.80**	<0.793	<0.793	<0.511
	2/5/2019	**102**	**1.31**	<0.793	<0.793	<0.511
Weichert Realtors (former Clear Payments and Future State)						
AMB-4 / FC-1						
	12/12/2016	**3.66**	**1.36**	**0.675**	<0.0793	<0.0511
	8/31/2017	**10.5**	<1.07	<0.793	<0.793	<0.511
	10/9/2017	**6.60**	<1.07	**4.05**	<0.793	<0.511
	6/19/2018	**2.54**	<1.07	<0.793	<0.793	<0.511
	9/25/2018	**4.98**	**2.76**	<0.793	<0.793	<0.511
	2/5/2019	**5.10**	**3.03**	**6.63**	<0.793	**0.651**
	5/30/2019	**1.70**	**1.15**	<0.793	<0.793	<0.511
	9/24/2019	<1.36	<1.07	<0.793	<0.793	<0.511
	5/27/2020	**7.33**	<1.07	<0.793	<0.793	<0.511
	11/5/2020	<1.36	<1.07	<0.793	<0.793	<0.511
	6/17/2021	**3.02**	<1.07	<0.793	<0.793	<0.511
	10/20/2021	**3.15**	**2.40**	<0.793	<0.793	<0.511
	11/3/2022	Could not access space				
	2/21/2023	Could not access space				
	8/28/2023	Could not access space				

Please see notes at end of table.

Table C-4
Ambient Air Analytical Results
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Analyte Concentration in µg/m3				
		PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
Kepler's						
AMB-5 / KU-1						
	12/12/2016	**119**	**168**	**2.16**	<0.0793	<0.0511
	8/31/2017	**10.50**	**514**	<0.793	<0.793	<0.511
	10/9/2017	**71.60**	**541**	**4.43**	**0.918**	<0.511
	12/4/2017	**33.80**	**624**	<0.793	<0.793	<0.511
	6/19/2018	**9.05**	**743**	<0.793	<0.793	<0.511
	9/25/2018	<33.9	**599**	<19.8	<19.8	<12.8
	2/5/2019	**20.80**	**771**	<0.793	<0.793	<0.511
	5/27/2020	**4.83**	**1,370**	<0.793	<0.793	<0.511
	10/16/2020	**9.17**	**750**	<0.793	<0.793	<0.511
	6/17/2021	**5.68**	**151**	<0.793	<0.793	<0.511
	10/20/2021	**27.00**	**863**	<15.9	<15.9	<10.2
	11/3/2022	**18.50**	**7,980**	<0.793	<0.793	<0.511
	2/21/2023	<27.2	**1,600**	<15.9	<15.9	<10.2
	8/28/2023	<5.43	**101**	<0.793	<0.793	<0.511
Background Ambient						
AMB-OUT						
	5/30/2019	**17.2**	**1.58**	<0.793	<0.793	<0.511
	9/24/2019	**6.12**	<1.07	<0.793	<0.793	<0.511
	5/27/2020	**8.35**	**2.16**	**1.67**	<0.793	<0.511
	10/16/2020	**3.06**	<1.07	<0.793	<0.793	<0.511
	6/17/2021	**36.20**	**1.52**	<0.793	<0.793	<0.511
	10/21/2021	**1.72**	<1.07	<0.793	<0.793	<0.511
	11/3/2022	**5.78**	**1.19**	<0.793	<0.793	<0.511
	2/21/2023	<1.36	<1.07	<0.793	<0.793	<0.511
	8/28/2023	**9.71**	<1.07	**1.32**	<0.793	<0.511

Notes:

µg/m^3 = microgram per cubic meter

PCE = Tetrachloroethene

TCE = Trichloroethene

cis-1,2,-DCE = cis-1,2-Dichloroethene

trans-1,2-DCE = trans-1,2-Dichloroethene

DEQ Risk-Based Concentrations from Oregon Department of Environmental Quality's *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* , revised May 2018.

Bold values indicate concentration detected above the minimum reporting limit.

Shaded values indicate concentrations detected above one or more applicable RBCs.

< = Concentration was not detected above the shown minimum reporting limit.

-- = Not analyzed or not available.

>Pv = The calculated RBC exceeds the vapor pressure of the pure chemical. This chemical cannot create an unacceptable risk via this pathway.

Table C-5
Vapor Collection System Discharge Results
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Analyte Concentration in µg/m3				
		PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
EX						
	8/31/2017	**13,300**	**1,620**	**303**	<1.59	**1.17**
	10/9/2017	**5,440**	**317**	**51.4**	<1.59	**2.15**
	12/4/2017	**1,670**	**222**	**33.6**	<1.59	<1.02
	6/19/2018	**1,010**	**211**	**31.4**	<1.59	<1.02
	2/5/2019	**765**	**152**	**50.8**	<1.59	**10.2**
	5/31/2019	**653**	**163**	**71.8**	<1.59	**16.8**
	9/25/2019	**1,980**	**241**	**176**	**1.48**	**38.1**
	5/27/2020	**183**	**126**	**32.7**	<0.793	**7.95**
	10/16/2020	**401**	**152**	**116**	**0.797**	**12.9**
	6/17/2021	**213**	**86.8**	**28.9**	<0.793	**0.726**
	10/20/2021	**188**	**71.3**	**21.3**	<0.793	<0.511
	11/3/2022	**126**	**108**	**31.4**	<0.793	**7.62**
	2/21/2023	**139**	**117**	**26.3**	<0.793	**8.31**
	8/28/2023	**Faulty Summa Cannister**				
Acceptable Effluent Discharge Concentrations		229,500	8,830	--	--	1,800

Notes:

µg/m^3 = microgram per cubic meter

PCE = Tetrachloroethene

TCE = Trichloroethene

cis-1,2,-DCE = cis-1,2-Dichloroethene

trans-1,2-DCE = trans-1,2-Dichloroethene

Acceptable Effluent Discharge Concentrations were derived by adjusting DEQ RBCs for urban residential air inhalation by the attenuation factor calculated from the EPA SCREEN3 dispersion model.

DEQ RBCs = Oregon Department of Environmental Quality's Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, revised May 2018.

EPA SCREEN3 = United State Environmental Protection Agency SCREEN3 Model and User's Guide, EPA 454/B-95-004, 1995.

Bold values indicate concentration detected above the minimum reporting limit.

< = Concentration was not detected above the shown minimum reporting limit.

-- = Not analyzed or not available.

Table C-6
Sub-Slab Vapor Monitoring Results
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Analyte Concentration in µg/L				
		PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
Main Building						
VP-3						
	6/19/2018	<1.59	<1.59	**27.0**	**21.7**	<1.02
	9/25/2018	<1.59	<1.59	**155**	**52.4**	<1.02
	2/5/2019	<1.59	<1.59	**33.3**	**20.3**	<1.02
	5/31/2019	<1.59	<1.59	**144**	**68.0**	<1.02
	9/25/2019	<0.793	<0.793	**45.7**	**18.7**	<0.511
VP-7						
	6/19/2018	<1.59	<1.59	**29.0**	**29.4**	<1.02
	9/25/2018	<1.59	<1.59	**55.8**	**9.56**	<1.02
	2/5/2019	<1.59	<1.59	**98.9**	**63**	<1.02
VP-8						
	12/04/2017	<1.59	<1.59	**56.4**	**3.54**	<1.02
VP-12						
	12/04/2017	**2.89**	<1.59	**8.29**	**2.30**	<1.02
	5/31/2019	<1.59	<1.59	**18.9**	**8.22**	<1.02
	9/25/2019	<0.793	<0.793	**20.8**	**6.57**	<0.511
VP-13						
	5/31/2019	<1.59	<1.59	**24.5**	**9.64**	<1.02
	9/25/2019	<0.793	<0.793	**73.5**	**14.3**	<0.511
VP-15						
	12/04/2017	<1.59	<1.59	**87.6**	**34.6**	<1.02
	5/31/2019	<1.59	<1.59	**40.8**	**27.1**	<1.02
	9/25/2019	<0.793	<0.793	**80.0**	**17.7**	<0.511
Back Building						
VP-14						
	6/19/2018	<1.59	<1.59	**383**	**4.31**	<1.02
	9/25/2018	**69.7**	<1.59	**591**	**48.1**	**6.86**
	2/5/2019	**6.93**	<1.59	**81.7**	**2.34**	**4.49**
	5/31/2019	**6.08**	<1.59	**313**	**9.31**	<1.02
	9/25/2019	**5.71**	<0.793	**402**	**17.5**	<0.511
	12/04/2017	<1.59	<1.59	**22.4**	**405**	<1.02
	2/5/2019	<1.59	<1.59	**10.5**	**429**	<1.02
	12/04/2017	<1.59	<1.59	**29.4**	**509**	<1.02
	6/19/2018	<1.59	<1.59	**19.5**	**502**	<1.02
	9/25/2018	<1.59	<1.59	**21.0**	**267**	<1.02
	4/26/2018	<1.59	<1.59	**76.1**	**146**	<1.02
	6/19/2018	<1.59	<1.59	**10.4**	**467**	<1.02
	9/25/2018	<19.8	<19.8	<33.9	**152**	<12.8
	2/5/2019	<1.59	<1.59	**15.5**	**461**	<1.02
	4/26/2018	<1.59	<1.59	**58.9**	**238**	<1.02
	6/19/2018	<1.59	<1.59	**13.6**	**536**	<1.02
	9/25/2018	<19.8	<19.8	<33.9	**1,230**	<12.8
	2/5/2019	<1.59	<1.59	**26.8**	**480**	<1.02

Please see notes at end of table.

Table C-6
Sub-Slab Vapor Monitoring Results
Tigard Cleaners
Tigard, Oregon

Sample ID	Sample Date	Analyte Concentration in µg/L				
		PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
VP-14						
	2/5/2019	<1.59	<1.59	**17.9**	**921**	<1.02
	2/5/2019	<1.59	<1.59	**28.4**	**512**	<1.02
	5/24/2018	**598**	**8.76 J+**	**7,110**	**663**	**2.27 J+**
Kepler's						
VP-9						
	12/04/2017	<1.59	<1.59	**22.4**	**405**	<1.02
	2/5/2019	<1.59	<1.59	**10.5**	**429**	<1.02
VP-10						
	12/04/2017	<1.59	<1.59	**29.4**	**509**	<1.02
	6/19/2018	<1.59	<1.59	**19.5**	**502**	<1.02
	9/25/2018	<1.59	<1.59	**21.0**	**267**	<1.02
VP-16						
	4/26/2018	<1.59	<1.59	**76.1**	**146**	<1.02
	6/19/2018	<1.59	<1.59	**10.4**	**467**	<1.02
	9/25/2018	<19.8	<19.8	<33.9	**152**	<12.8
	2/5/2019	<1.59	<1.59	**15.5**	**461**	<1.02
VP-17						
	4/26/2018	<1.59	<1.59	**58.9**	**238**	<1.02
	6/19/2018	<1.59	<1.59	**13.6**	**536**	<1.02
	9/25/2018	<19.8	<19.8	<33.9	**1,230**	<12.8
	2/5/2019	<1.59	<1.59	**26.8**	**480**	<1.02
VP-18						
	2/5/2019	<1.59	<1.59	**17.9**	**921**	<1.02
VP-19						
	2/5/2019	<1.59	<1.59	**28.4**	**512**	<1.02
Saxony Property						
SG-MW6i-2.5						
	5/24/2018	**598**	**8.76**	**7,110**	**663**	**2.27**

Notes:

µg/m^3 = microgram per cubic meter

DEQ RBCs = Oregon Department of Environmental Quality's Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, revised May 2018.

Bold values indicate concentration detected above the method reporting limit.

Shaded values indicate concentrations detected above one or more applicable RBCs.

< = Concentration was not detected above the shown method reporting limit.

-- = Not analyzed or not available.

>Pv = The calculated RBC exceeds the vapor pressure of the pure chemical. This chemical cannot create an unacceptable risk via this pathway.

J+ = Result is an estimated concentration and may be biased high.

Table C-7
Stormwater Pipe Outfall Analytical Results for Volatile Organic Compounds
Tigard Cleaners
Tigard, Oregon

Sample ID:	OUTFALL	
Sample Date:	8/1/2018	11/5/2020
Concentrations in µg/L		
Acetone	<50.0	<50.0
Acrolein	<50.0	<50.0
Acrylonitrile	<10.0	<10.0
Benzene	<1.00	<1.00
Bromobenzene	<1.00	<1.00
Bromodichloromethane	<1.00	<1.00
Bromoform	<1.00	<1.00
Bromomethane	<5.00	<5.00
n-Butylbenzene	<1.00	<1.00
sec-Butylbenzene	<1.00	<1.00
tert-Butylbenzene	<1.00	<1.00
Carbon Disulfide	<1.00	<1.00
Carbon Tetrachloride	<1.00	<1.00
Chlorobenzene	<1.00	<1.00
Chlorodibromomethane	<1.00	<1.00
Chloroethane	<5.00	<5.00
Chloroform	<5.00	<5.00
Chloromethane	<2.50	<2.50
2-Chlorotoluene	<1.00	<1.00
4-Chlorotoluene	<1.00	<1.00
1,2-Dibromo-3-Chloropropane	<5.00	<5.00
1,2-Dibromoethane	<1.00	<1.00
Dibromomethane	<1.00	<1.00
1,2-Dichlorobenzene	<1.00	<1.00
1,3-Dichlorobenzene	<1.00	<1.00
1,4-Dichlorobenzene	<1.00	<1.00
Dichlorodifluoromethane	<5.00	<5.00
1,1-Dichloroethane	<1.00	<1.00
1,2-Dichloroethane	<1.00	<1.00
1,1-Dichloroethene	<1.00	<1.00
cis-1,2-Dichloroethene	**4.92**	**12.5**
trans-1,2-Dichloroethene	<1.00	<1.00
1,2-Dichloropropane	<1.00	<1.00
1,1-Dichloropropene	<1.00	<1.00
1,3-Dichloropropane	<1.00	<1.00
cis-1,3-Dichloropropene	<1.00	<1.00
trans-1,3-Dichloropropene	<1.00	<1.00

Please see notes at end of table.

Table C-7
Stormwater Pipe Outfall Analytical Results for Volatile Organic Compounds
Tigard Cleaners
Tigard, Oregon

Sample ID:	OUTFALL			
Sample Date:	8/1/2018		11/5/2020	
Concentrations in µg/L				
2,2-Dichloropropane	<1.00		<1.00	
di-Isopropyl Ether	<1.00		<1.00	
Ethylbenzene	<1.00		<1.00	
Hexachloro-1,3-Butadiene	<1.00		<1.00	
Isopropylbenzene	<1.00		<1.00	
p-Isopropyltoluene	<1.00		<1.00	
2-Butanone (MEK)	<10.0		<10.0	
Methylene Chloride	<5.00		<5.00	
4-Methyl-2-Pentanone (MIBK)	<10.0		<10.0	
Methyl Tert-Butyl Ether	<1.00		**0.436**	J
Naphthalene	<5.00		<5.00	
n-Propylbenzene	<1.00		<1.00	
Styrene	<1.00		<1.00	
1,1,1,2-Tetrachloroethane	<1.00		<1.00	
1,1,2,2-Tetrachloroethane	<1.00		<1.00	
1,1,2-Trichlorotrifluoroethane	<1.00		<1.00	
Tetrachloroethene	**0.908**	J	**5.59**	J+
Toluene	<1.00		<1.00	
1,2,3-Trichlorobenzene	<1.00		<1.00	
1,2,4-Trichlorobenzene	<1.00		<1.00	
1,1,1-Trichloroethane	<1.00		<1.00	
1,1,2-Trichloroethane	<1.00		<1.00	
Trichloroethene	<1.00		**2.15**	
Trichlorofluoromethane	<5.00		<5.00	
1,2,3-Trichloropropane	<2.50		<2.50	
1,2,4-Trimethylbenzene	<1.00		<1.00	
1,2,3-Trimethylbenzene	<1.00		<1.00	
1,3,5-Trimethylbenzene	<1.00		<1.00	
Vinyl Chloride	**0.904**	J	**1.04**	
Xylenes, Total	<3.00		<3.00	

Notes:

µg/L = micrograms per liter.

Bold values indicate concentration detected above the method detection limit.

Shaded values indicate concentrations detected above one or more applicable RBCs.

< = Concentration was not detected above the shown minimum reporting limit.

-- = Not analyzed or not available.

J = The reported concentration is an estimated quantity.

J+ = Result is an estimated concentration and may be biased high.

Table C-8
Soil Analytical Results
Tigard Cleaners
Tigard, Oregon

Sample ID:	GRAB SOIL NORTH	
Sample Date:	1/28/2019	
Concentrations in mg/kg		
Acetone	**0.0543**	
Acrylonitrile	<0.0178	
Benzene	<0.00142	
Bromobenzene	<0.0178	
Bromodichloromethane	<0.00355	
Bromoform	<0.0355	
Bromomethane	<0.0178	
n-Butylbenzene	<0.0178	
sec-Butylbenzene	<0.0178	
tert-Butylbenzene	<0.00711	
Carbon Disulfide	<0.0178	
Carbon Tetrachloride	<0.00711	
Chlorobenzene	<0.00355	
Chlorodibromomethane	<0.00355	
Chloroethane	<0.00711	
Chloroform	**0.00377**	
Chloromethane	<0.0178	
2-Chlorotoluene	<0.00355	
4-Chlorotoluene	<0.00711	
1,2-Dibromo-3-Chloropropane	<0.0355	UJ
1,2-Dibromoethane	<0.00355	
Dibromomethane	<0.00711	
1,2-Dichlorobenzene	<0.00711	
1,3-Dichlorobenzene	<0.00711	
1,4-Dichlorobenzene	<0.00711	
Dichlorodifluoromethane	<0.00355	
1,1-Dichloroethane	<0.00355	
1,2-Dichloroethane	<0.00355	
1,1-Dichloroethene	<0.00355	
cis-1,2-Dichloroethene	<0.00355	
trans-1,2-Dichloroethene	<0.00711	
1,2-Dichloropropane	<0.00711	
1,1-Dichloropropene	<0.00355	
1,3-Dichloropropane	<0.00711	
cis-1,3-Dichloropropene	<0.00355	
trans-1,3-Dichloropropene	<0.00711	
2,2-Dichloropropane	<0.00355	

See notes and end of table

Table C-8
Soil Analytical Results
Tigard Cleaners
Tigard, Oregon

Sample ID:	GRAB SOIL NORTH	
Sample Date:	1/28/2019	
Concentrations in mg/kg		
di-Isopropyl Ether	<0.00142	
Ethylbenzene	<0.00355	
Hexachloro-1,3-Butadiene	<0.0355	
Isopropylbenzene	<0.00355	
p-Isopropyltoluene	<0.00711	
2-Butanone (MEK)	<0.0355	
Methylene Chloride	<0.0355	
4-Methyl-2-Pentanone (MIBK)	<0.0355	
Methyl Tert-Butyl Ether	<0.00142	
Naphthalene	<0.0178	
n-Propylbenzene	<0.00711	
Styrene	<0.0178	
1,1,1,2-Tetrachloroethane	<0.00355	
1,1,2,2-Tetrachloroethane	<0.00355	UJ
1,1,2-Trichlorotrifluoroethane	<0.00355	
Tetrachloroethene	**0.0338**	
Toluene	**0.00352**	J
1,2,3-Trichlorobenzene	<0.00355	
1,2,4-Trichlorobenzene	<0.0178	
1,1,1-Trichloroethane	<0.00355	
1,1,2-Trichloroethane	<0.00355	
Trichloroethene	**0.0077**	J+
Trichlorofluoromethane	<0.00355	
1,2,3-Trichloropropane	<0.0178	
1,2,4-Trimethylbenzene	<0.00711	
1,2,3-Trimethylbenzene	<0.00711	UJ
1,3,5-Trimethylbenzene	<0.00711	
Vinyl Chloride	<0.00355	
Xylenes, Total	<0.00924	

Notes:

mg/kg = milligrams per kilogram

DEQ RBCs = Oregon Department of Environmental Quality's Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, revised May 2018.

Bold values indicate concentration detected above the method reporting limit.

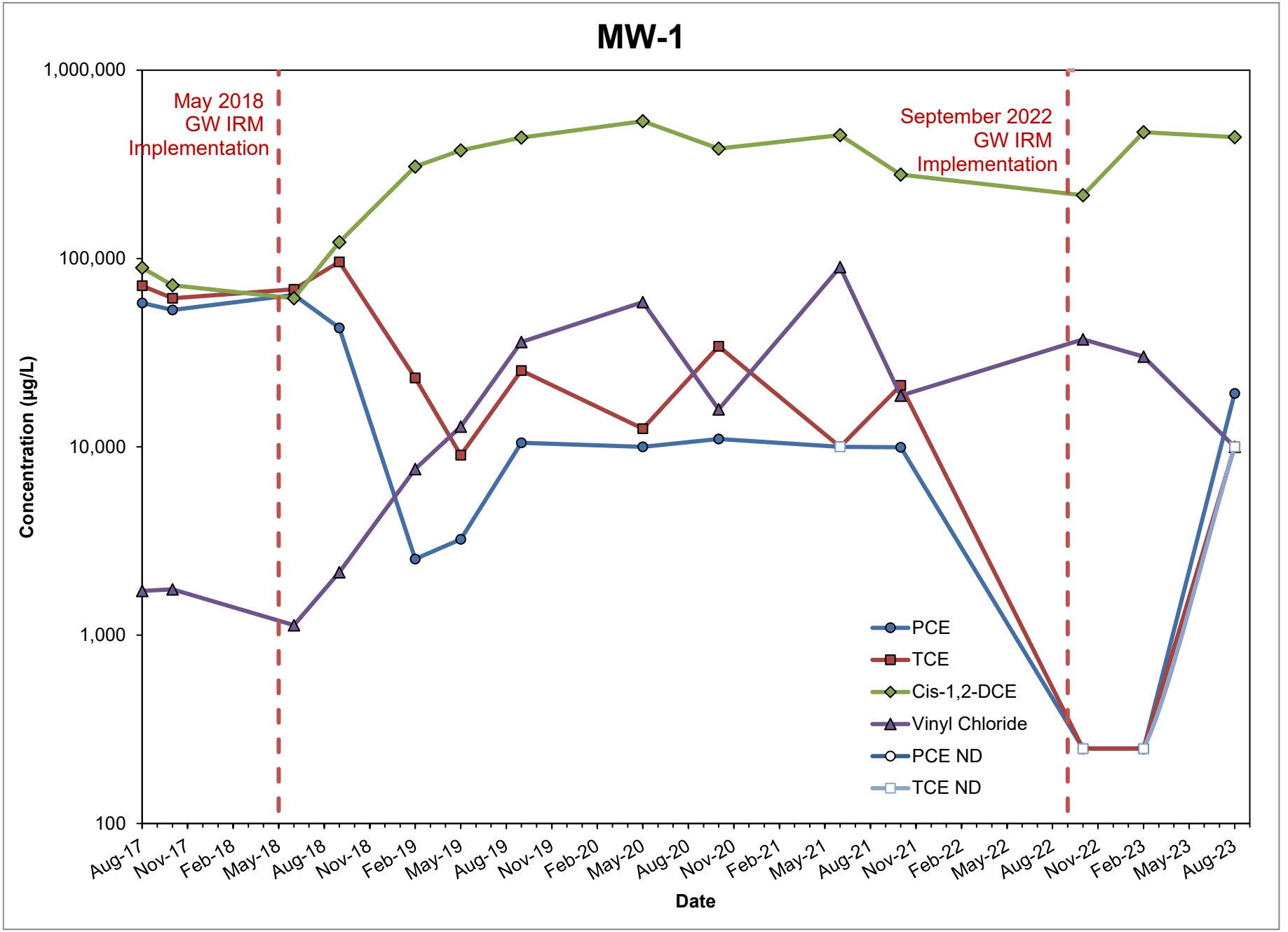
Shaded values indicate concentrations detected above one or more applicable RBCs.

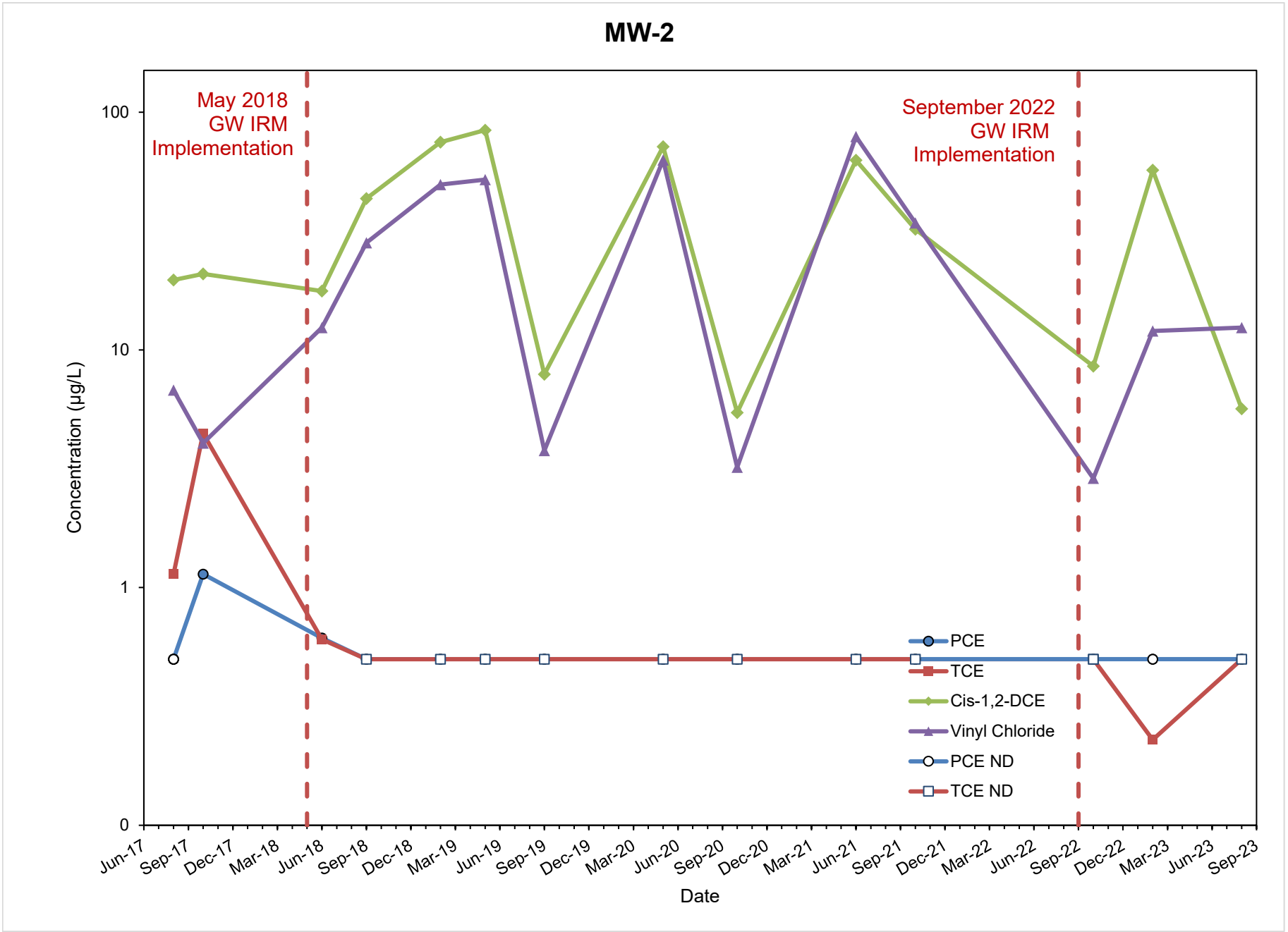
< = Concentration was not detected above the shown method reporting limit.

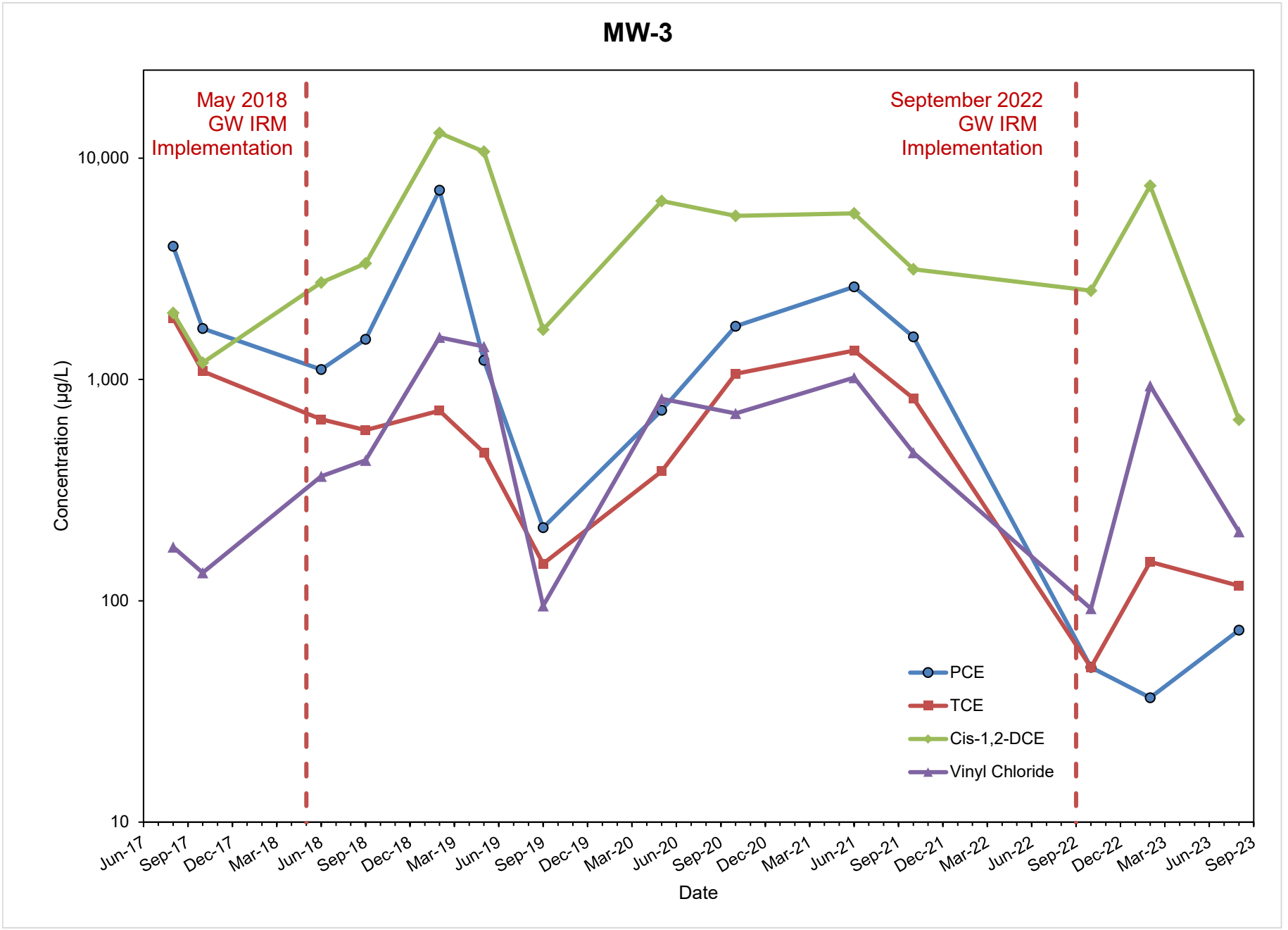
-- = Not analyzed or not available.

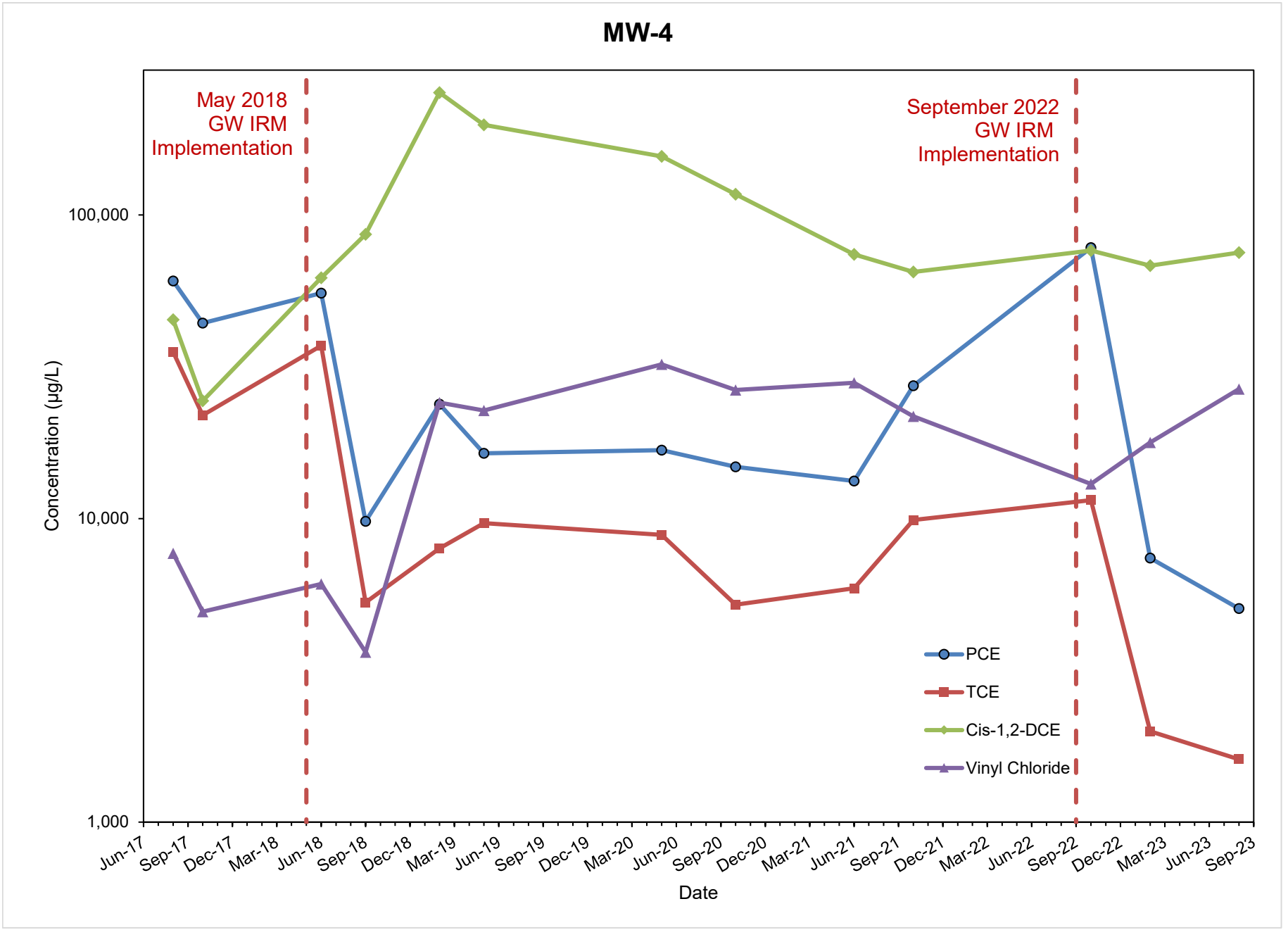
Appendix D

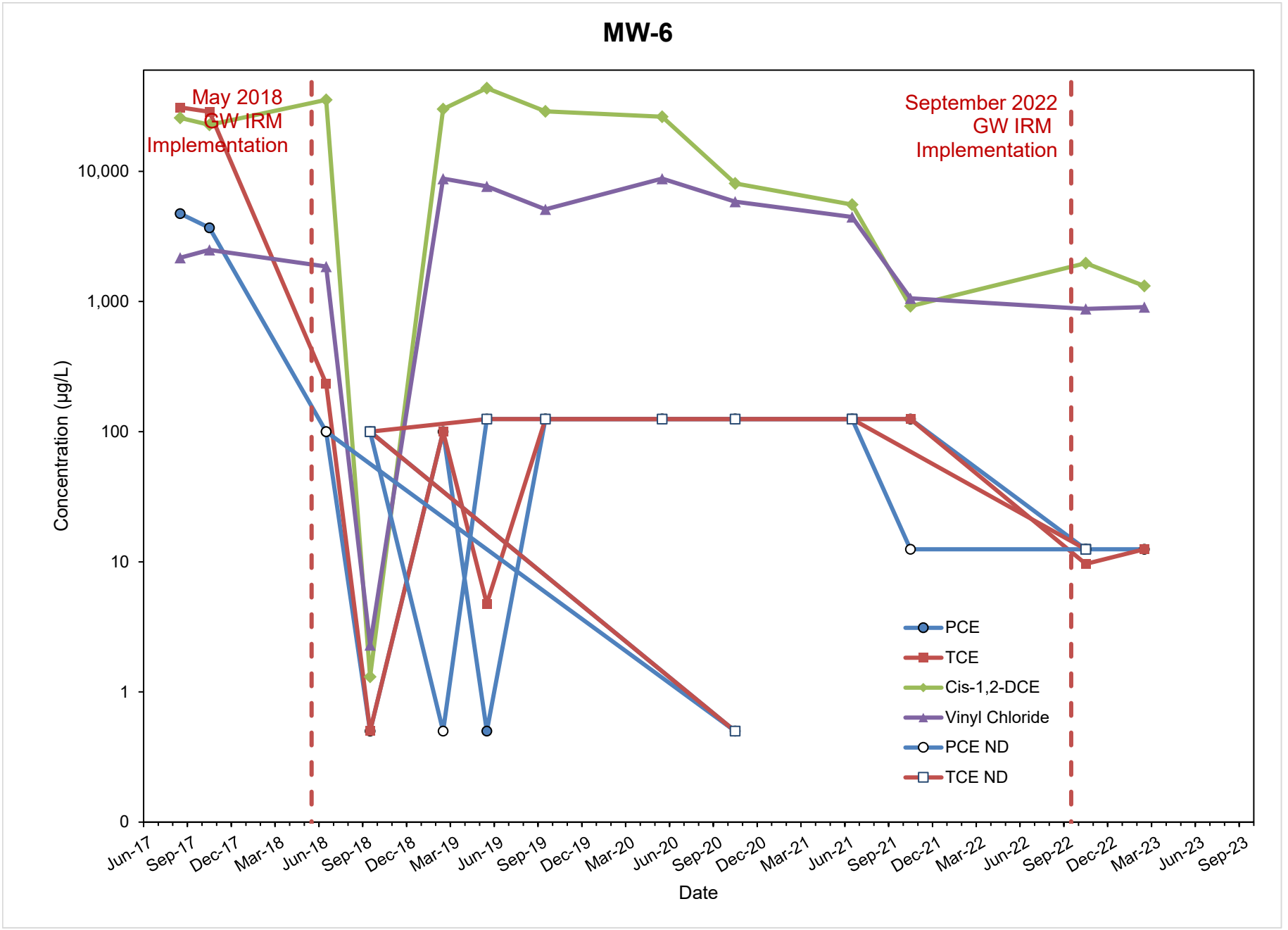
Monitoring Well Concentration Trend Plots

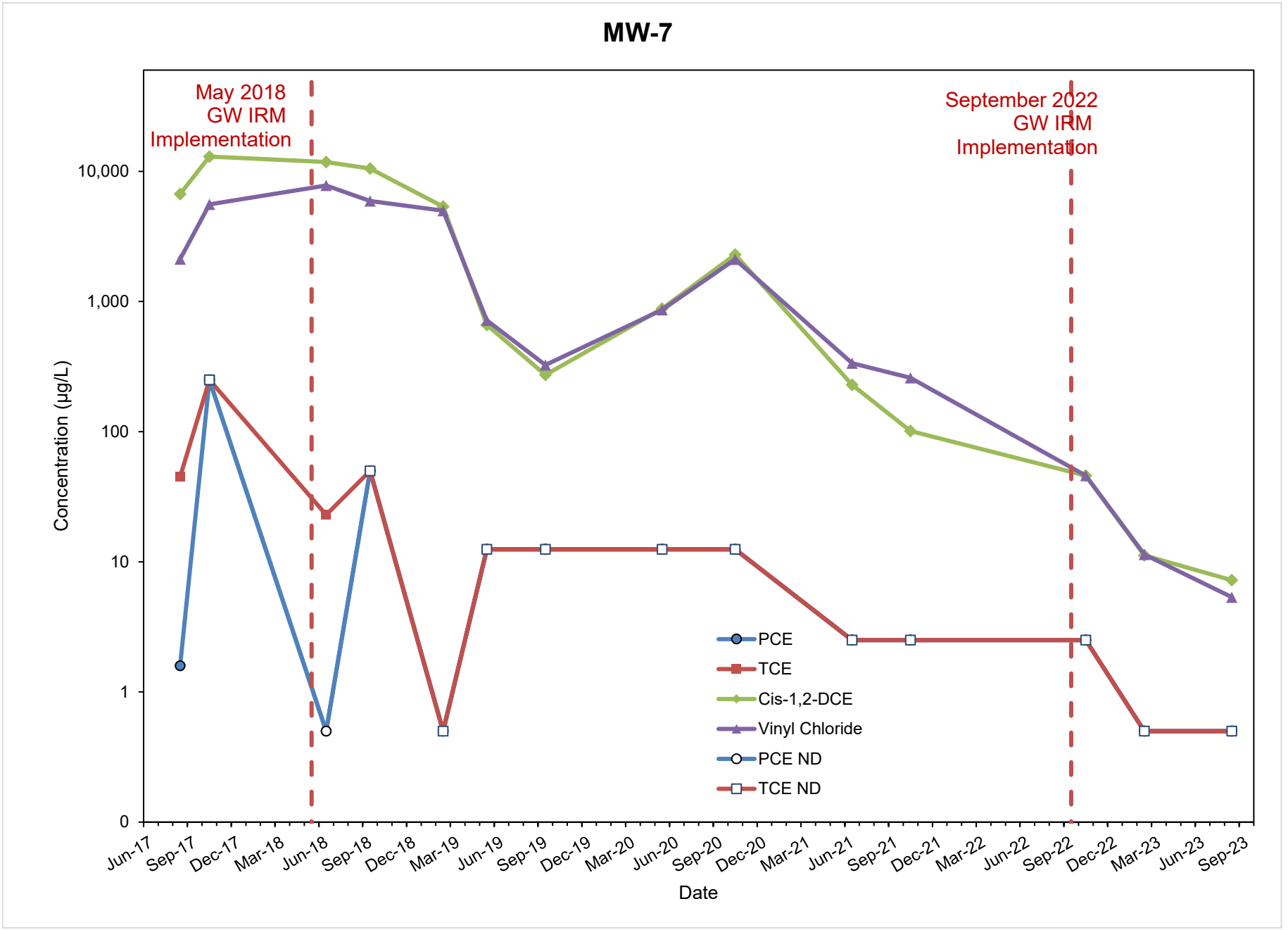

MW-1
May 2018
GW IRM
Implementation
September 2022
GW IRM
Implementation
1,000,000
100,000
10,000
1,000
100
Concentration (µg/L)
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
Feb-19
May-19
Aug-19
Nov-19
Feb-20
May-20
Aug-20
Nov-20
Feb-21
May-21
Aug-21
Nov-21
Feb-22
May-22
Aug-22
Nov-22
Feb-23
May-23
Aug-23
Date
PCE
TCE
Cis-1,2-DCE
Vinyl Chloride
PCE ND
TCE ND

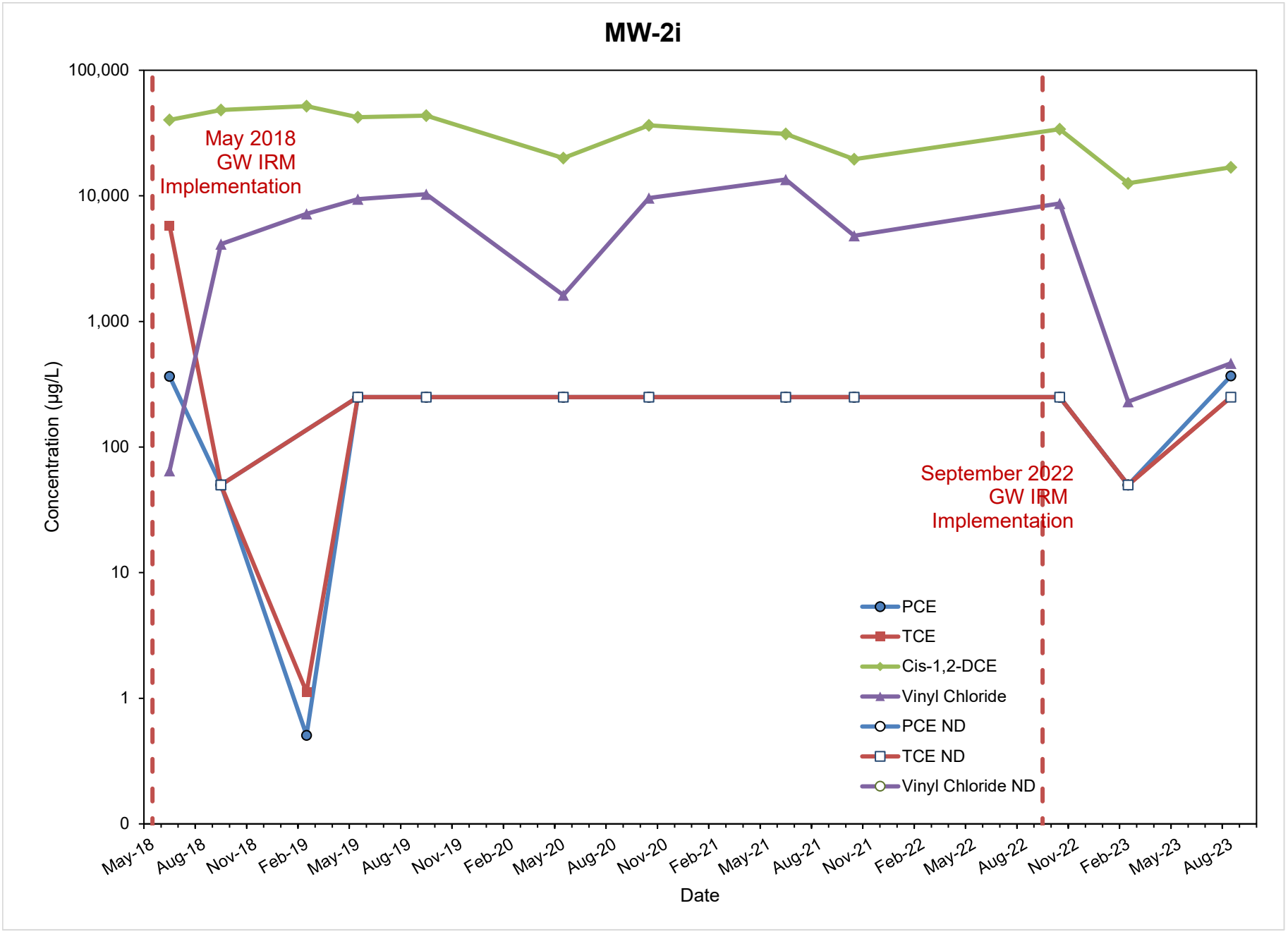

MW-2
May 2018
GW IRM
Implementation
September 2022
GW IRM
Implementation
100
10
1
0
Concentration (µg/L)
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
Mar-20
Jun-20
Sep-20
Dec-20
Mar-21
Jun-21
Sep-21
Dec-21
Mar-22
Jun-22
Sep-22
Dec-22
Mar-23
Jun-23
Sep-23
Date
PCE
TCE
Cis-1,2-DCE
Vinyl Chloride
PCE ND
TCE ND

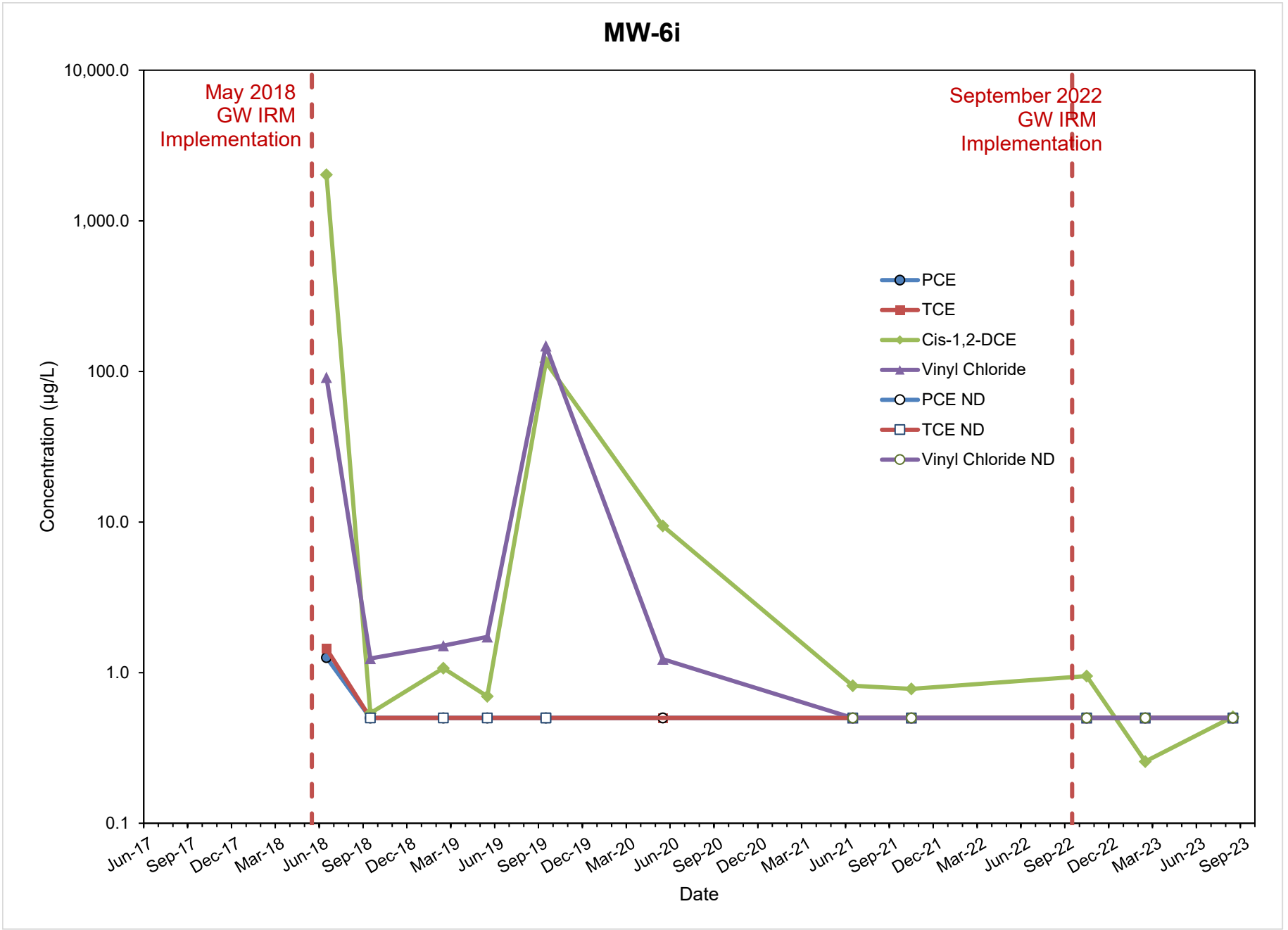

MW-3
May 2018
GW IRM
Implementation
September 2022
GW IRM
Implementation
10,000
1,000
100
10
Concentration (µg/L)
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
Mar-20
Jun-20
Sep-20
Dec-20
Mar-21
Jun-21
Sep-21
Dec-21
Mar-22
Jun-22
Sep-22
Dec-22
Mar-23
Jun-23
Sep-23
Date
PCE
TCE
Cis-1,2-DCE
Vinyl Chloride


MW-4
May 2018
GW IRM
Implementation
September 2022
GW IRM
Implementation
100,000
10,000
1,000
Concentration (µg/L)
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
Mar-20
Jun-20
Sep-20
Dec-20
Mar-21
Jun-21
Sep-21
Dec-21
Mar-22
Jun-22
Sep-22
Dec-22
Mar-23
Jun-23
Sep-23
Date
PCE
TCE
Cis-1,2-DCE
Vinyl Chloride


MW-6
May 2018
GW IRM
Implementation
September 2022
GW IRM
Implementation
Concentration (µg/L)
10,000
1,000
100
10
1
0
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
Mar-20
Jun-20
Sep-20
Dec-20
Mar-21
Jun-21
Sep-21
Dec-21
Mar-22
Jun-22
Sep-22
Dec-22
Mar-23
Jun-23
Sep-23
Date
PCE
TCE
Cis-1,2-DCE
Vinyl Chloride
PCE ND
TCE ND


MW-7
May 2018
GW IRM
Implementation
September 2022
GW IRM
Implementation
Concentration (µg/L)
10,000
1,000
100
10
1
0
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
Mar-20
Jun-20
Sep-20
Dec-20
Mar-21
Jun-21
Sep-21
Dec-21
Mar-22
Jun-22
Sep-22
Dec-22
Mar-23
Jun-23
Sep-23
Date
PCE
TCE
Cis-1,2-DCE
Vinyl Chloride
PCE ND
TCE ND


MW-2i
100,000
10,000
1,000
100
10
1
0
Concentration (µg/L)
May 2018
GW IRM
Implementation
September 2022
GW IRM
Implementation
PCE
TCE
Cis-1,2-DCE
Vinyl Chloride
PCE ND
TCE ND
Vinyl Chloride ND
May-18
Aug-18
Nov-18
Feb-19
May-19
Aug-19
Nov-19
Feb-20
May-20
Aug-20
Nov-20
Feb-21
May-21
Aug-21
Nov-21
Feb-22
May-22
Aug-22
Nov-22
Feb-23
May-23
Aug-23
Date


MW-6i
May 2018
GW IRM
Implementation
September 2022
GW IRM
Implementation
PCE
TCE
Cis-1,2-DCE
Vinyl Chloride
PCE ND
TCE ND
Vinyl Chloride ND
Concentration (µg/L)
10,000.0
1,000.0
100.0
10.0
1.0
0.1
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
Mar-20
Jun-20
Sep-20
Dec-20
Mar-21
Jun-21
Sep-21
Dec-21
Mar-22
Jun-22
Sep-22
Dec-22
Mar-23
Jun-23
Sep-23
Date