



2023 Fiero Temporary Groundwater Monitoring Plan Summary

Pontiac North Campus

Draft Submittal: March 2024

Re-Submittal: July 2024

Final Submittal: August 2024

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Draft Submittal: March 22, 2024

Re-Submittal: July 3, 2024

Final Submittal: August 14, 2024

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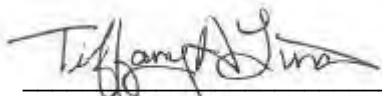
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Acronyms and Abbreviations

bgs	below ground surface
cis-1,2-DCE	cis-1,2-dichloroethylene
COC	chain of custody
CSM	conceptual site model
cVOC	Chlorinated Volatile Organic Compound
1,1-DCA	1,1-dichloroethane
DO	dissolved oxygen
EDD	electronic data deliverable
EGLE	Michigan Department of Environment, Great Lakes, and Energy
FTMP	Fiero Temporary Monitoring Plan
GMC	General Motors Corporation
MS/MSD	matrix spike/matrix spike duplicate
NRFSSBASE	Nonresidential Fiero site specific vapor intrusion to indoor air criteria – basement
NRFSSSOG	Nonresidential Fiero site specific vapor intrusion to indoor air criteria – slab on grade
ORP	oxidation reduction potential
PCE	tetrachloroethene
RACER	Revitalizing Auto Communities Environmental Response
RFSSBASE	Residential Fiero site specific vapor intrusion to indoor air criteria – basement
RFSSSOG	Residential Fiero site specific vapor intrusion to indoor air criteria – slab on grade
SSVIAC	Site-Specific Volatilization to Indoor Air Criteria
SVMP	soil vapor monitoring point
TCE	trichloroethene
TOC	total organic carbon
USEPA	U.S. Environmental Protection Agency
VI	vapor intrusion
VOC	volatile organic compound

1 Introduction

This report summarizes the results of the 2023 quarterly monitoring events completed as part of the Fiero Temporary Monitoring Plan (FTMP) at the Fiero properties of the Revitalizing Auto Communities Environmental Response Trust (RACER) Pontiac North Campus Site (Site) located in Pontiac, Michigan. The 2023 FTMP was submitted to the United States Environmental Protection Agency (USEPA) on March 9, 2023, then revised and resubmitted on April 4, 2023. The FTMP was approved by USEPA via email transmittal on March 16, 2023. The data generated as a result of the FTMP adds to the previous monitoring data for the Fiero portion of the Site.

1.1 Background

The general objective of the FTMP was to monitor the chlorinated volatile organic compounds (cVOCs) in groundwater at the Site and assess the potential risk for off-site vapor intrusion. The FTMP was also implemented to supplement groundwater data previously submitted in the *Fiero Vapor Intrusion Conceptual Site Model (CSM)* (Arcadis 2021) and the *2021-2022 Fiero Site Investigation Summary Report* (Arcadis 2023). Furthermore, additional information and data collected at the Fiero Properties is included in the *Draft Corrective Action Summary Report* (Arcadis 2023). CVOs, specifically tetrachloroethylene (PCE), trichloroethylene (TCE), and cis-1,2-dichloroethylene (cis-DCE), are the primary compounds detected in groundwater. Historical references indicate the presence of steel storage and fabrication operations; trim shop operations; lacquer mixing, spraying, and drying operations; printing and upholstering operations; and woodworking and assembly operations. These operations continued through the late 1970s, when the facility was retooled to manufacture and assemble Fiero vehicles, which occurred for an approximate 10-year period from 1980 through 1990. From the time General Motors Corporation (GMC) ceased manufacturing Fiero models and decommissioned assembly operations in the early 1990s until the late 2000s, the former Fiero Assembly building was used for prototyping, storage, and other non-manufacturing processes. While details pertaining to exact dates and potential sources of cVOCs were not documented and cannot be confirmed, based on available information, the use of chlorinated solvents could have spanned from after World War II up to approximately 1990.

In response to cVOCs vapor intrusion (VI) criteria exceedances near the southwestern boundary of the Fiero property, an investigation was completed in 2021 and 2022 to strengthen the CSM by mapping the groundwater impacts at higher resolution, identifying storage and transport zones, and locating source areas. The findings of the investigation identified several upgradient cVOC source areas in the vicinity of MWF16-05, MWF16-18, and MWF16-06 and confirmed cVOC impacts in groundwater extend off-site above Fiero residential site-specific volatilization to indoor air criteria (SSVIAC) (EGLE 2020) but did not identify an imminent risk of off-site residential VI associated with the former Fiero property.

Site stratigraphy can generally be categorized as three distinct hydrostratigraphic units including:

- Interbedded Unit – consisting of sands, silts, and clays typically encountered between ground surface and 20 feet below ground surface (bgs);
- Sand Unit – consisting of well to poorly sorted sands typically encountered between 20 to 40 feet bgs; and
- Basal Clay – unit consisting of clays and silts typically encountered around 40 feet bgs.

Typically, groundwater is first encountered within the sand unit beneath the interbedded unit and most of the monitoring wells are set within the sand unit, however there is an area in the vicinity of MWF16-12 and MWF16-06 of where groundwater is encountered within the interbedded unit resulting in perched groundwater. Apparent groundwater flow has consistently been to the southwest outside of the perched unit but fans out to the west, southwest, south, and southeast from where perched groundwater is present.

2 Sampling Procedures

The monitoring events consisted of gauging and sampling select monitoring wells and sampling soil vapor monitoring points (SVMPs) at the former Fiero property. The monitoring locations included in the events are shown on **Figure 1**.

As outlined in the 2023 FTMP, a monitoring event was completed each quarter in 2023. A summary of each event follows:

- Quarter 1 (Q1) – On March 6th, 2023, Arcadis began monitoring activities by gauging Site monitoring wells. Following the gauging event SVMPs and monitoring wells were sampled for volatile organic compounds (VOCs) over a 3-day period. MW-16-22, a flush mount well, was covered by water at the time of sampling. MW-16-22 was later converted to a stick up well on March 29th, 2023 and was sampled on April 7th, 2023.
- Quarter 2 (Q2) – On June 5th, 2023, Arcadis began monitoring activities by gauging Site monitoring wells. Following the gauging event, SVMPs and monitoring wells were sampled for VOCs over a 6-day period.
- Quarter 3 (Q3) – On August 28th, 2023, Arcadis began monitoring activities by gauging Site monitoring wells. Following the gauging event, SVMPs and monitoring wells were sampled for VOCs over a 4-day period. Due to a transportation issue, samples from MW-09-22, MW-16-22, MWF16-05, MWF16-16, and MWF16-18 were lost and could not be recovered. These wells were resampled on September 7th, 2023.
- Quarter 4 (Q4) – On November 27th, 2023, Arcadis began monitoring activities by gauging Site monitoring wells. Following the gauging event, SVMPs and monitoring wells were sampled for VOCs over a 6-day period.

All groundwater samples were submitted to Merit Laboratories, Inc. in Lansing, Michigan (Merit) and analyzed for VOCs via USEPA Method 8260 and all soil vapor samples were submitted to Eurofins Air Toxics (Eurofins) in Folsom, California and analyzed for VOCs via USEPA Method TO-15. The analytical reports from Merit and Eurofins are provided as **Appendix A**. The results of the gauging and sampling are provided in the attached tables:

- **Table 1** – 2023 Groundwater Elevation Summary
- **Table 2** – Summary of 2023 Groundwater Analytical Results
- **Table 3** – Summary of 2023 Soil Gas Analytical Results

The following sections of this report summarize the procedures used to complete the groundwater and soil vapor sampling and a data discussion of the sample analysis results collected during 2023.

2.1 Water Level Measurements

The groundwater level measurements were recorded at select monitoring wells to the nearest 0.01 foot with an electronic water level meter. Groundwater elevations were calculated using surveyed top-of-well casing elevations. A summary of water levels and groundwater elevations is presented in **Table 1**.

2.2 Groundwater Sample Collection

Groundwater samples were collected using low-flow sampling procedures. The procedures are taken from the Low-Stress (or Low-Flow) Purging and Sampling Procedure (USEPA 2017), which we understand is the USEPA Region V standard method for collecting low-stress/low-flow groundwater samples from monitoring wells.

During sampling, purge water was monitored for dissolved oxygen (DO), temperature, specific conductivity, turbidity, oxygen reduction potential (ORP), and pH. These water quality measurements were used to determine groundwater sample stability prior to collection of the groundwater samples. All groundwater sampling logs are provided in **Appendix B**.

Due to factors such as accessibility and recovery, the following deviations from the planned sampling protocol occurred during the 2023 FTMP implementation:

- MWF16-24 was covered by a roll-off box and could not be uncovered before the end of the Q2 event
- MWF7-02 could not be sampled during the Q4 event due to insufficient water column

2.3 Soil Vapor Sample Collection

Soil vapor monitoring was completed quarterly at the six SVMP locations (SV-01-21 through SV-06-21) as part of the 2023 FTMP. The methodology for collecting soil vapor samples included completing a helium leak test to verify the seal of the sampling point, and a “shut-in” test completed on the sampling train to verify that a closed system was in place prior to sampling. Following a passed helium leak test and shut-in test, a SUMMA® canister, with attached pre-set flow regulator, was used to collect the sample for laboratory analysis of the Fiero site-specific VOCs in accordance with the USEPA Method TO-15. Following sampling, an additional three volumes of air was purged into a Tedlar® bag. Oxygen, carbon dioxide, and methane readings were collected from the Tedlar® bag containing purged air at the sample point.

3 Monitoring Results

The following sections summarize the results of the four quarters of monitoring during the 2023 FTMP.

3.1 Groundwater Elevation

Groundwater elevations from unconfined water table zone monitoring wells (screened across the water table) were used to create groundwater potentiometric surface maps (**Figure 2A** and **2B**). A summary of groundwater elevations collected during the 2023 FTMP is provided in **Table 1**. In most areas across the Site groundwater is first encountered within the sand unit beneath the interbedded unit around 16 to 20 feet bgs. However, at select monitoring well locations (e.g., MWF16-06, MWF16-07, and MWF16-12), groundwater was encountered shallower within the interbedded unit at 10 to 12 feet bgs. A review of historical water level measurements showed that the higher elevation of groundwater was not present in the early to mid-2000s but became evident in 2018. The increased occurrence of shallow water may be the result of the degradation of concrete and asphalt surfaces, or some other change in conditions, that have resulted in increased infiltration across the area. Apparent groundwater flow direction is generally to the southwest and remained consistent through each event except for the area with perched groundwater where flow fans out to the west, southwest, south, and southeast.

3.2 Groundwater Analytical Results

Over the four quarters of sampling, 83 groundwater samples were collected and analyzed for VOCs. Groundwater data were compared to the Fiero SSVIAC provided by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on April 21, 2020. These criteria include residential and non-residential SSVIAC for basement (RFSSBASE and NRFSSBASE) and slab-on-grade (RFSSSOG and NRFSSSOG) scenarios (EGLE 2020). The Fiero SSVIAC is provided as **Appendix C**. Only nonresidential values are relevant to on-site groundwater results, as there are or will be deed restrictions limiting on-site use to nonresidential. Locations within 100 feet of the perimeter property boundary were compared to residential SSVIAC, as they have the potential to be a source of soil vapor impacts to nearby off-site properties. A summary of the groundwater analytical results is provided in **Table 2** and the laboratory analytical reports are provided in **Appendix A**.

A summary of the four quarters of groundwater analytical results follows:

- There were no exceedances of Fiero nonresidential SSVIAC in groundwater.
- The primary compounds detected in groundwater include PCE, TCE, and cis-1,2-DCE. Figures showing the distribution and analytical results for each of these compounds are provided as **Figures 3** through **5**.
 - Other compounds detected above the Fiero residential SSVIAC in groundwater, but are not as extensive as PCE, TCE, and cis-1,2-DCE and are not near the property boundary include: chlorodibromomethane and carbon tetrachloride.
- Elevated VOC detections remain upgradient near the identified source areas in the central portion of the Site and decrease steadily as they approach the southwest property boundary.
 - Concentrations of PCE increased at monitoring well MWF16-22. It was below the Fiero residential SSVIAC for PCE (130 µg/L) during the 2Q monitoring event (77 µg/L) and was above the Fiero residential SSVIAC in the 4Q monitoring event (285 µg/L). MWF16-22 is downgradient of the source areas and is approximately 140 feet from the southwest property boundary. Downgradient perimeter monitoring well MWF16-25 was non-detect for PCE, TCE, and cis-1,2-DCE in 2023.
- All off-site monitoring wells were below the Fiero residential SSVIAC for all monitoring events, except for MWOS-10, which exceeded the Fiero residential SSVIAC in groundwater for TCE (8.1 µg/L) during all four quarterly events ranging from 9 to 12 ug/L (**Figure 4**).

3.2.1 ZVI Performance Monitoring

Zero-valent Iron (ZVI) Injections were conducted in December 2022 through January 2023. Details of the injection were provided in the *In Situ Chemical Reduction with Zero Valent Iron Pilot Study Installation Summary Report* dated March 2023 (Arcadis, 2023). The ZVI injection pilot study was completed to collect the information required to evaluate ZVI injections as a potential remedial action and to provide a basis for a full-scale ZVI barrier should it be determined necessary and cost-effective. ZVI Injections were completed as part of a pilot test in Q1 2023 accompanied by quarterly sampling for four quarters. This section evaluates the performance monitoring data associated with ZVI injection and provides recommendations associated with the ZVI pilot study moving forward.

The ZVI performance monitoring network consists of five monitoring wells: MW-13-22, MW-14-22, MW-15-22, MW-16-22, and MWF16-16. These wells are located upgradient and downgradient of the ZVI injection area. In general, concentrations in monitoring wells MW-13-22, MW-15-22, and MWF16-16 remain unchanged while MW-14-22 and MW-16-22 increased and decreased; respectively. Results are shown in **Table 2**, **Figure 6**, and are summarized below:

- MWF16-16 is approximately 70 feet upgradient of the ZVI injection area and is screened from 22 to 32 feet bgs. The primary COC detected at MWF16-16 is PCE which has shown a general increasing trend since 2020.
- MW-16-22 (screened 26 to 31 ft bgs) is approximately 100 feet downgradient of the northwestern portion of the ZVI injection area where confirmatory borings showed evidence of distribution of ZVI in the targeted treatment zone. The primary COC detected at MW-16-22 is PCE which has decreased from approximately 300 µg/L prior to the ZVI injection to 94 µg/L over four quarters of sampling in 2023. PCE is now below the Fiero residential SSVIAC. While cis-1,2-DCE increased to above Fiero residential SSVIAC in third quarter 2023, concentrations were back to below criteria during the fourth quarter. This temporary and singular event increase of cis-1,2-DCE is not likely a result of by-product generation associated with the ZVI treatment. An increase in by-product generation would stay elevated as the by-product would continue to be generated and stay elevated for more than one quarter.
- MW-14-22 (screened 30 to 35 ft bgs) is located approximately 60 feet downgradient from the southeast portion of the ZVI injection area where there was significant surfacing of ZVI during the injection and no ZVI was observed in the target treatment zone. The primary COC detected at MW-14-22 is PCE which increased from approximately 100 µg/L to 212 µg/L in second quarter 2023. Since the spike in second quarter, PCE concentrations have been decreasing but still exceed the Fiero residential SSVIAC as of fourth quarter 2023. An increasing trend for cis-1,2-DCE has been observed over the 2023 monitoring period, but concentrations remain below the Fiero residential SSVIAC. TCE concentrations have been generally stable ranging between 15 and 22 µg/L, above the Fiero residential SSVIAC.
- MW-13-22 and MW-15-22, screened 22 to 27 ft bgs and 31.5 to 36.5 feet bgs respectively, are located approximately 60 feet downgradient from the southeast portion of the ZVI injection area. Concentrations at these wells have remained non-detect before and after the ZVI injections.

The arrival of decreasing concentrations at MW-16-22 and the arrival of increasing concentrations at MW-14-22 in second quarter correspond with an average groundwater velocity of 1.2 feet per day, which is consistent with what was expected based on the CSM.

In general, even with an increasing trend of PCE entering the ZVI treatment transect, the injected ZVI has been successful in reducing concentrations of PCE to below Fiero residential SSVIAC where the ZVI injection was successful in distributing ZVI to the target treatment zone, specifically on the northwestern portion of the ZVI treatment area. In the southeastern portion of the ZVI treatment area where ZVI distribution was not evident, the increasing PCE concentration at MW-14-22 may be due to the disruption of saturated soils upgradient that may have temporarily liberated COCs into groundwater. The fact that no increases were observed in nearby wells MW-13-22 and MW-15-22 (also downgradient of the southeastern portion of the ZVI treatment area) suggest this potential liberation is localized. The decreasing trend of PCE at MW-14-22 since second quarter suggests that the increase is temporary.

ZVI pilot test performance monitoring will not continue for the remainder of 2024 as sufficient data has been collected to determine the effectiveness of the ZVI barrier. Monitoring wells MW-13-22, MW-14-22, and MW-15-22 will no longer be gauged or sampled. Monitoring wells MW-16-22 and MWF16-16 will continue to be gauged and sampled semi-annually for VOCs.

3.3 Groundwater Trends and Stability Analysis

Concentration trends for PCE, TCE, and cis-1,2-DCE were reviewed at on-site and off-site monitoring wells. Trend analysis from monitoring wells can provide insights regarding source maturity. Stable concentrations (i.e.,

no trend with low variability in concentrations over time) and decreasing trends indicate that the source is mature or depleted. Increasing trends at individual source area wells can indicate an expanding plume but can also reflect the wide range of concentrations and temporal variability common within source areas.

Mann-Kendall trend tests were conducted at selected wells for constituents present at concentrations higher than the Fiero residential SSVIAC, and coefficient of variation values were calculated. In addition, the magnitude of the trend was evaluated using Sen's slope estimator (SSE). The SSE is a non-parametric method for estimating the slope of time-series data. The approach involves computing slopes for each point compared to every successive point, and then using the median of these slopes as an estimate of overall slope. The SSE is robust to outliers, data sets with a limited number of non-detects (i.e., values less than sample reporting limits), and datasets with missing values.

The Mann-Kendall trend analysis included data from 2017 through 2023, to coincide with the more frequent sampling events, and only included wells with at least 5 data points collected since 2017 with at least 50 percent detections, which is further outlined in Arcadis' April 4, 2023, *Fiero Temporary Groundwater Monitoring Program* (Arcadis 2023) submitted to and approved by the USEPA. A summary of the trend analysis in groundwater can be found in **Figures 7A** through **7C**, and trend graphs associated with the Mann-Kendall trend tests, as well as concentration over time trend graphs for wells that did not meet the criteria for Mann-Kendall analysis, are included in **Appendix D**. Key findings of the trend analysis include the following:

PCE: PCE in groundwater is primarily stable with three wells indicating a statistically significant increasing trend. Stability analysis results for PCE in groundwater are summarized in **Figure 7A**.

- ZVI pilot test performance monitoring well MW-14-22, source boundary well MWF7-02, and source area well MWF16-16 show increasing trends. MW-14-22 has had an overall increasing trend for PCE since monitoring began; however, it saw an approximate 100 µg/L spike in concentration in second quarter 2023 and has remained steady. As discussed in Section 3.2.1, increased concentrations of MW-14-22 may be due to the disruption of soils associated with the ZVI emplacement that may have temporarily liberated COCs to groundwater. MWF7-02, located 800 feet from the downgradient property boundary, was not able to be sampled in the Q4 2023 event due to an insufficient water column and remains below Fiero residential SSVIAC.
- Concentrations of PCE at MWF16-16 have continued to fluctuate over the past few years but with an overall increasing trend. MWF16-05, located in a source area, previously showed an increasing trend but has since changed to no significant trend, steadily decreasing through 2023.
- Southern property boundary well MW-02-17 previously showed a decreasing trend but has since changed to no significant trend.
- After additional sampling in 2023, UNKNOWN-01 met Mann-Kendall analysis criteria for PCE and shows no significant trend.
- ZVI pilot test performance monitoring well MW-16-22 also met Mann-Kendall analysis criteria for PCE in 2023 and shows a decreasing trend associated with the ZVI treatment (Section 3.2.1).

TCE: Statistical trends for TCE vary across the Site. Stability analysis results for TCE in groundwater are summarized in **Figure 7B**.

- TCE in groundwater at MW-06-20, located near the southwest property boundary, continues to show an overall increasing trend fluctuating between 7 and 14 µg/L.
- Concentrations in monitoring well MW-08-21, located near the southwest property boundary, have been increasing since second quarter 2022 with concentrations generally low and ranging from 9 to 12 µg/L.

- Monitoring well MW-14-22, located downgradient of the ZVI transect has also shown an overall increasing trend but has been relatively stable since September 2022 (see Section 3.2.1).
- Monitoring well MWF16-18, located near a source area, had previously had no significant trend, but as of third quarter 2023 concentrations have increased from 20 to 30 µg/L resulting in an overall increasing trend.
- MWF16-15, interior to the Site, and MWF7-02 located at the southwestern property boundary previously had no significant trend but concentrations have increased over the last 2 quarters resulting in an increasing trend. Both wells are below Fiero residential SSVIAC.
- MWOS-10 located offsite and downgradient from MW-06-20 and MW-08-21 continues to fluctuate around Fiero residential SSVIAC and has no significant trend.
- MWOS-09R previously had a decreasing trend, but now shows no significant trend beginning first quarter 2023. MWF16-05 and MWF16-06 previously had no significant trend, but now show a decreasing trend. MW-16-22 now meets Mann-Kendall analysis criteria and shows a decreasing trend (see Section 3.2.1).

Cis-1,2-DCE: Cis-1,2-DCE are generally stable to decreasing across the Site with a few exceptions. Stability analysis results for cis-1,2-DCE in groundwater are summarized in **Figure 7C**.

- Cis-1,2-DCE in groundwater continues to show an increasing trend at MWF16-18 near a source area.
- Monitoring well MWF16-22 downgradient of the source area and MWF16-25 near the southwest property boundary now show increasing trends but remain below Fiero residential SSVIAC.
- Monitoring well MWF16-23 near the southwest property boundary previously had no significant trend and now shows a decreasing trend.
- Downgradient of MWF16-23 and MWF16-25, offsite wells MWOS-08 and MWOS-09R show decreasing and no significant trends, respectively.
- MWOS-10, previously showing a decreasing trend now has no significant trend and continues to stay below Fiero residential SSVIAC.
- MW-16-22 now meets Mann-Kendall analysis criteria and shows no significant trend. MW-16-22 is located downgradient of the ZVI transect (Section 3.2.1).
- All other sampled locations continue to be stable or decreasing.

Based on the trend analysis, continued monitoring is recommended. A Fiero Temporary Monitoring Plan for 2024 is discussed in Section 5.

3.4 Soil Gas Results

To monitor for potential vapor intrusion concerns, soil vapor samples were collected from all six SVMP locations on-site and off-site for each of the four quarters. The location of the SVMPs and a summary of the analytical results are shown on **Figure 8**. Complete analytical results are provided in **Table 3**. The following summarizes the results of soil vapor results:

- The SVMPs parent sample results have not exceeded the soil vapor Fiero residential SSVIAC for VOCs in 2023. A duplicate sample collected from SV-02-21 during Q1 exceeded Fiero residential SSVIAC for TCE. SV-02-01 is a deep SVMP installed above the water table at a depth of 23.25 to 23.75 ft bgs.
- Offsite SVMPs (i.e., SV-03-21, SV-05-21) installed at typical basement depth (11.5 to 12 ft bgs) were non-detect for TCE and PCE.

Based on the data collected and analyses completed there is not an imminent risk of vapor intrusion (VI) at the off-site structures. Note that the northern residential structure was destroyed by fire during the first quarter of 2022 and was demolished. The parcel is currently vacant.

3.5 Soil Vapor Stability Analysis

Mann-Kendall trend tests were conducted at all SVMP with sufficient data for detectable constituents, and coefficient of variation values were calculated. The Mann-Kendall trend analysis included all data collected from the SVMP's since installation in 2021 through August 2023. The methodology, preliminary results summary, figures, and trend graphs associated with the Mann-Kendall trend tests are included in **Appendix D**.

Key findings of the trend analysis include the following:

- PCE in soil vapor is stable at all on-site and off-site locations. Stability analysis results for PCE in soil vapor are summarized in **Figure 9A**.
- TCE in soil vapor is stable or decreasing at all on-site and off-site locations. Stability analysis results for TCE in soil vapor are summarized in **Figure 9B**.

3.6 Analytical Data Quality Assurance / Quality Control

For lab analysis quality control, one duplicate sample was ordered for every ten groundwater samples, and one matrix spike/matrix spike duplicate (MS/MSD) was ordered for every 20 groundwater samples. Furthermore, one trip blank was ordered for each sample set which included analysis for VOCs. Within a day after delivery of each set of samples to Merit Laboratories, a sample set receipt was issued from the laboratory and checked for any inconsistencies with the Chain of Custody (COC) and planned reference test methods. No issues with hold times or inconsistencies were noted for the 2023 FTMP groundwater sampling events conducted.

Standard Level II laboratory analytical reports were delivered for each COC in both pdf files and electronic data deliverable (EDD) packages, followed by laboratory quality control reports. EDD files were uploaded to the project database from which tables were developed, and results were checked against the laboratory reports and evaluated with respect to data flags as well as consistency with past results. For the 2023 FTMP data, there were no trip blank detections, and duplicate sample results were representative of matched samples. All data collected was usable with no notable variances.

4 Conclusions

This FTMP consisted of four quarters of monitoring in 2023. The objective of the FTMP was to collect additional data to further evaluate the potential for cVOC migration, as well as concentration trends for cVOCs in groundwater. Conclusions from the 2023 FTMP are summarized below:

- There were no exceedances of Fiero non-residential SSVIAC in groundwater on-site.
- The only compound detected in groundwater off-site above the Fiero residential SSVIAC was TCE from monitoring well location MWOS-10 during all monitoring events.
- There were no exceedances of the soil gas Fiero residential SSVIAC at SVMP locations during the four quarters of sampling completed in 2023. Based on the data collected and analyses completed there is not an imminent risk of VI at the off-site structures.
- Based on the trend analysis, on-site concentrations of PCE are primarily stable with three locations (MWF7-02, MW-14-22, and MWF16-16) located near source areas exhibiting increasing trends. On-site concentration trends of TCE vary across the Site with several locations (MW-02-17, MW-06-20, MW-08-21, MW-14-22, MWF16-15, and MWF16-18) exhibiting statistically increasing trends. Concentrations of cis-1,2-DCE are generally stable to decreasing across the Site with a few exceptions (MW-11-22, MWF16-22, and MWF16-18) exhibiting increasing trends. Off-site monitoring wells for PCE, TCE, and cis-DCE are stable to decreasing, and concentrations are expected to remain consistent with previous sampling events. Monitoring and trend analysis of these locations will continue to evaluate if any action is needed.

5 Recommendations

Based on the results RACER recommends continued monitoring of select monitoring wells within the source area, along the plume core, downgradient near the property boundary, and off-site on a semi-annual frequency except for offsite well, MWOS-10, which will be sampled quarterly. The proposed monitoring locations, monitoring frequency and analytical parameters are summarized and illustrated in **Appendix E**. The 2024 FTMP will be completed in parallel with the overall Site GMP (Arcadis 2018).

Groundwater gauging and sampling methodology of the 2024 FTMP will be consistent with the 2023 FTMP, which utilizes the USEPA Low-Stress (or Low-Flow) Purging and Sampling Procedure (USEPA 2017) described in sections 2.1 and 2.2. All samples will be submitted for laboratory analysis of VOCs via USEPA Method 8260. Additional recommended changes to the FTMP for 2024 include:

- Monitoring well MW-11-22 will be added to the FTMP and sampled semi-annually to provide another data point downgradient of MWF16-22.
- Monitoring well MWF16-26 will be added to the FTMP and sampled semi-annually to provide another data point west of MWF16-22.
- Monitoring well MWOS-10 will continue to be sampled quarterly through 2024.
- ZVI pilot test performance monitoring will not continue for the remainder of 2024 as sufficient data has been collected to determine the effectiveness of the ZVI barrier. Monitoring wells MW-13-22, MW-14-22, and MW-15-22 will no longer be gauged or sampled. Monitoring wells MW-16-22 and MWF16-16 will continue to be gauged and sampled semi-annually for VOCs.

In addition to groundwater monitoring, soil vapor will be sampled from the existing soil vapor monitoring probes (SVMP's) on a semi-annual frequency as part of the 2024 FTMP. Furthermore, a nested set of SVMP's, one shallow and one deep, will be installed in the right of way of St. Clair St., downgradient of MWOS-10. The shallow

SVMP screen will be consistent with the depth of a basement, about 10-12 feet below ground surface, and the deep SVMP will be screened just above the seasonably high-water table. Each SVMP will be constructed of a half-inch outer diameter, 6-inch-long stainless-steel screen attached to a quarter-inch outer diameter nylon lined tubing that extends to the ground surface. Filter sand material will be installed from the base of the screen to 6-inches above its top. Dry granular bentonite will be installed 6-inches above the filter sand. Hydrated bentonite will be installed from the top of the dry bentonite to within 6-inches of ground surface. The SVMP will be protected by a 5-inch steel flush-mount well cover set in a concrete pad at the ground surface. Samples will be collected one week after installation and then continue on a quarterly basis through 2024. The methodology will be consistent with the 2023 FTMP described in section 2.3. Samples will be analyzed for Fiero site-specific VOCs in accordance with the USEPA Method TO-15.

This FTMP will be executed for 2024 at which time an assessment will be completed to evaluate appropriate changes or modifications for 2025. After each event for 2024, the data results will be communicated to USEPA during regularly scheduled meetings. Following completion of the 2024 FTMP a summary report will be provided to USEPA and include:

- Written summary of field activities
- Figures and tables summarizing the analytical results.
- Groundwater elevation contour maps for the semi-annual gauging events
- cVOC trend graphs and a summary of Mann-Kendall stability analysis for wells with exceedances of residential site-specific vapor intrusion screening levels for a basement scenario. The Mann-Kendall analysis can be utilized when the following criteria are met:
 - o Include data collected after 2017, when sampling frequency increased and following a spike in concentrations observed at certain monitoring wells due to deteriorating concrete slab conditions.
 - o At least 5 data samples collected after 2017.
 - o Of the samples collected after 2017, at least 50% of the samples have detections.
- Based on the above criteria for Mann-Kendall, some wells do not have sufficient data to perform the Mann-Kendall analysis. For those wells a concentration over time graph will be developed.

6 References

- Arcadis 2018. Groundwater Monitoring Program Modification Request, RACER Trust Pontiac North Campus. August 27.
- Arcadis 2021. Vapor Intrusion Conceptual Site Model Report, RACER Trust Pontiac North Campus – Fiero Properties. September 08.
- Arcadis 2022. Fiero Temporary Monitoring Plan, RACER Trust Pontiac North Campus. February 23.
- Arcadis 2023. Corrective Action Summary Report, RACER Trust Pontiac North Campus February 10.
- Arcadis 2023. 2021-2022 Fiero Site Investigation Summary, RACER Trust Pontiac North Campus. February 21.
- Arcadis 2023. In Situ Chemical Reduction with Zero Valent Iron Pilot Study Installation Summary, Pontiac North Campus, Former Fiero Property. March.
- Arcadis 2023. 2023 Revised Fiero Temporary Monitoring Plan, RACER Trust Pontiac North Campus. April 04.
- Michigan Department of Environment, Great Lakes, and Energy (EGLE) 2020. Former Fiero Assembly Site-Specific Criteria Evaluation. April 21.
- U.S. Environmental Protection Agency (USEPA; Region I). 1996. Low-Stress (or Low-Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells – Revision 4. July 30, 1996; Revised September 19, 2017.

Tables

Table 1
2023 Groundwater Elevation Summary
RACER Trust Pontiac North Campus
Former Fiero Properties
Pontiac, Michigan



Well ID	Ground Elevation	Well Elevation ¹	Total Depth (ft) ²	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
				Date	Depth to Water (ft) ²	Groundwater Elevation	Date	Depth to Water (ft) ²	Groundwater Elevation	Date	Depth to Water (ft) ²	Groundwater Elevation	Date	Depth to Water (ft) ²	Groundwater Elevation
Former Fiero Powerhouse															
MW-02-17	973.53	972.52	29.71	--	--	--	6/5/2023	25.82	946.70	--	--	--	11/27/2023	25.78	946.74
MW-05-18	976.03	975.21	33.58	--	--	--	6/5/2023	27.22	947.99	--	--	--	11/27/2023	27.23	947.98
MW-06-20	975.54	974.97	29.55	3/6/2023	29.22	945.75	6/5/2023	26.06	948.91	8/28/2023	26.03	948.94	11/27/2023	26.05	948.92
MW-07-20	975.48	975.06	30.15	--	--	--	6/5/2023	26.62	948.44	--	--	--	11/27/2023	26.63	948.43
MW-08-21	976.04	975.50	30.70	3/6/2023	27.58	947.92	6/5/2023	26.83	948.67	8/28/2023	26.81	948.69	11/27/2023	26.82	948.68
MW-13-22	973.17	972.62	27.10	3/6/2023	22.88	949.74	6/5/2023	21.98	950.64	8/28/2023	21.45	951.17	11/27/2023	21.41	951.21
MW-14-22	973.21	972.71	35.20	3/6/2023	23.25	949.46	6/5/2023	22.51	950.20	8/28/2023	22.36	950.35	11/27/2023	22.54	950.17
MW-15-22	972.97	972.66	36.50	3/6/2023	23.37	949.29	6/5/2023	22.64	950.02	8/28/2023	22.50	950.16	11/27/2023	22.65	950.01
MW-16-22	972.84	972.50	34.76	3/7/2023	23.45	949.05	6/5/2023	26.59	945.91	8/28/2023	26.48	946.02	11/27/2023	26.61	945.89
MWF7-02	NA	970.58	22.62	--	--	--	6/5/2023	19.39	951.19	--	--	--	11/27/2023	19.50	951.08
MWF7-03	973.63	973.31	32.52	--	--	--	6/5/2023	21.51	951.80	--	--	--	11/27/2023	21.62	951.69
MWF12-01R	964.97	967.99	23.24	--	--	--	6/5/2023	20.27	947.72	--	--	--	11/27/2023	20.90	947.09
MWF12-02R	962.38	961.91	22.49	--	--	--	6/5/2023	13.45	948.46	--	--	--	11/27/2023	13.55	948.36
MWF15-01	NA	969.35	28.78	--	--	--	6/7/2023	18.73	950.62	--	--	--	11/27/2023	18.92	950.43
MWF16-07	973.36	972.65	17.48	--	--	--	6/5/2023	4.66	967.99	--	--	--	11/27/2023	5.89	966.76
MWF16-15	973.30	972.71	35.48	--	--	--	6/5/2023	22.98	949.73	--	--	--	11/27/2023	22.04	950.67
MWF16-23	973.82	973.39	30.75	3/6/2023	24.76	948.63	6/5/2023	24.01	949.38	8/28/2023	23.94	949.45	11/27/2023	24.02	949.37
Unknown-01	969.51	969.16	24.06	--	--	--	6/5/2023	18.55	950.61	--	--	--	11/28/2023	18.73	950.43
Former Fiero Assembly															
MW-09-22	973.83	973.46	33.37	3/6/2023	21.84	951.62	6/5/2023	21.19	952.27	8/28/2023	21.06	952.40	11/27/2023	21.27	952.19
MW-11-22	977.42	976.75	34.69	--	--	--	6/5/2023	27.60	949.15	--	--	--	11/27/2023	27.64	949.11
MWF2	NA	971.74	84.88	--	--	--	6/5/2023	45.43	926.31	--	--	--	11/27/2023	32.32	939.42
MWF8-01	NA	972.94	27.18	--	--	--	6/5/2023	18.68	954.26	--	--	--	11/27/2023	18.71	954.23
TW-12-22	973.52	973.39	32.68	--	--	--	6/5/2023	22.93	950.46	--	--	--	11/30/2023	23.05	950.34
MWF16-05	973.95	973.68	23.00	3/6/2023	21.22	952.46	6/5/2023	20.53	953.15	8/28/2023	20.40	953.28	11/27/2023	20.63	953.05
MWF16-06	974.02	973.77	28.85	--	--	--	6/5/2023	14.48	959.29	--	--	--	11/28/2023	15.15	958.62
MWF16-12	973.60	973.20	18.89	--	--	--	6/5/2023	14.13	959.07	--	--	--	11/28/2023	13.95	959.25
MWF16-16	973.44	973.22	31.65	3/6/2023	23.32	949.90	6/5/2023	22.57	950.65	8/31/2023	22.35	950.87	11/28/2023	22.68	950.54
MWF16-17	973.70	973.32	31.81	--	--	--	6/5/2023	20.14	953.18	--	--	--	11/28/2023	20.27	953.05
MWF16-18	973.60	973.22	32.00	3/6/2023	21.69	951.53	6/5/2023	20.97	952.25	8/28/2023	20.70	952.52	11/27/2023	21.13	952.09
MWF16-22	973.50	973.18	33.92	--	--	--	6/5/2023	23.38	949.80	--	--	--	11/28/2023	23.49	949.69
MWF16-24	973.64	973.38	29.96	--	--	--	NM	NM	NM	--	--	--	11/27/2023	23.19	950.19
MWF16-25	NA	975.24	37.19	--	--	--	6/5/2023	26.08	949.16	--	--	--	11/27/2023	26.12	949.12
MWF16-26	NA	974.14	36.25	--	--	--	6/5/2023	24.56	949.58	--	--	--	11/27/2023	24.60	949.54
Offsite															
MWOS-08	975.55	975.09	29.15	3/6/2023	26.82	948.27	6/5/2023	26.07	949.02	8/29/2023	26.01	949.08	11/27/2023	26.09	949.00
MWOS-09R	976.68	976.18	29.80	3/6/2023	28.05	948.13	6/5/2023	27.33	948.85	8/28/2023	27.30	948.88	11/27/2023	27.32	948.86
MWOS-10	977.01	976.55	33.15	3/6/2023	29.19	947.36	6/5/2023	28.51	948.04	8/28/2023	27.53	949.02	11/27/2023	28.51	948.04

Table 1
2023 Groundwater Elevation Summary
RACER Trust Pontiac North Campus
Former Fiero Properties
Pontiac, Michigan



Well ID	Ground Elevation	Well Elevation ¹	Total Depth (ft) ²	Date	Depth to Water (ft) ²	Groundwater Elevation	Date	Depth to Water (ft) ²	Groundwater Elevation	Date	Depth to Water (ft) ²	Groundwater Elevation	Date	Depth to Water (ft) ²	Groundwater Elevation
Fiero Parking Lot															
PZF17-02	977.70	977.43	31.01	--	--	--	6/5/2023	24.11	953.32	--	--	--	11/27/2023	24.20	953.23
PZF17-04	972.90	972.47	28.87	--	--	--	6/5/2023	20.16	952.31	--	--	--	11/27/2023	20.23	952.24
PZF17-05	976.43	975.97	34.00	--	--	--	6/5/2023	26.05	949.92	--	--	--	11/27/2023	26.21	949.76

Abbreviations:

ft - feet
NA - Not Available
NM - Not Measured
-- Not gauged during quarterly events

Notes:

1. MWF15-01 was covered at the time of Q2 gauging and was gauged at a later date
2. MWF16-24 was covered by a roll-off and could not be uncovered before the end of the Q2 event
3. MWF16-16 and MWOS-08 were covered at the time of Q3 gauging and were gauged at a later date
4. MWF16-06, MWF16-12, MWF16-16, MWF16-17, MWF16-22, and Unknown-01 were covered by snow and ice at the time of gauging. They were uncovered the next morning and gauged on 11/28/23. TW-12-22 was covered by a GFL roll-off at the time of site-wide gauging, and was gauged on 11/30/23 after the roll-off was moved.

Footnotes:

- ¹ Top of Temporary Well Casing/Stickup Elevation is in feet National Vertical Geodetic Datum (1988).
- ² Measurements collected from top of temporary well casing/stickup.

Table 2
Summary of 2023 Groundwater Analytical Results
2023 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	NR Fiero SSVIAC <50k BASE	NR Fiero SSVIAC >50k SOG	NR Fiero SSVIAC >50k BASE	Units	MW-02-17 6/6/2023 MW-02-17_GW-060623	MW-02-17 12/1/2023 MW-02-17_GW-120123	MW-05-18 6/6/2023 MW-05-18_GW-060623	MW-05-18 12/1/2023 MW-05-18_GW-120123	MW-06-20 3/7/2023 MW-06-20_GW-030723	MW-06-20 6/6/2023 MW-06-20_GW-060623	MW-06-20 8/29/2023 MW-06-20_GW-082923	MW-06-20 11/30/2023 MW-06-20_GW-113023	MW-07-20 6/6/2023 MW-07-20_GW-060623	MW-07-20 12/1/2023 MW-07-20_GW-120123
Volatile Organics																	
1,1,1,2-Tetrachloroethane	180	93	5,700	2,400	8,500	3,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	22,000	11,000	210,000	92,000	310,000	140,000	ug/L	2	2	8	5	5 [5]	3 [3]	3 [3]	4	4	6
1,1,2,2-Tetrachloroethane	130	66	4,100	1,800	6,200	2,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,1,2-Trichloroethane	21	11	410	180	620	280	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	160	88	5,300	2,400	8,000	3,600	ug/L	1	2	6	4	7 [7]	5 [5]	4 [4]	4	6	9
1,1-Dichloroethene	410	220	8,300	3,800	13,000	5,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,2,3-Trichlorobenzene	4,100	2,100	18,000	18,000	18,000	18,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	91	47	1,800	790	2,700	1,200	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,2,3-Trimethylbenzene	2,000	1,100	41,000	18,000	61,000	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	270	130	5,100	2,200	7,700	3,300	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	1,100	590	22,000	9,900	34,000	15,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	0.029	0.061	0.042	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	110	370	160	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	19,000	9,900	160,000	160,000	160,000	160,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane	50	27	1,600	750	2,500	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,2-Dichloropropane	100	56	2,100	950	3,200	1,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,3,5-Trimethylbenzene	800	420	16,000	7,000	24,000	10,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	130	70	2,700	1,200	4,000	1,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	310	160	9,800	4,300	15,000	6,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
2-Butanone	4,000,000	2,200,000	59,000,000	27,000,000	88,000,000	40,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U [< 25 U]	< 25 U [< 25 U]	< 25 U [< 25 U]	< 25 U	< 25 U	< 25 U
2-Hexanone	24,000	12,000	490,000	220,000	740,000	320,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U
2-Methylnaphthalene	3,500	1,800	25,000	25,000	25,000	25,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	9,500,000	19,000,000	14,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U
Acetone	32,000,000	18,000,000	240,000,000	110,000,000	360,000,000	160,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U
Acrylonitrile	120	67	4,100	1,900	6,200	2,900	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U [< 2 U]	< 2 U [< 2 U]	< 2 U [< 2 U]	< 2 U	< 2 U	< 2 U
Benzene	34	18	1,100	510	1,700	760	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
Bromobenzene	3,300	1,700	66,000	29,000	99,000	43,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	760	2,600	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
Bromoform	6,400	3,200	200,000	83,000	300,000	120,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
Bromomethane	59	33	1,200	580	1,900	860	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
Carbon Disulfide	2,200	1,200	46,000	22,000	70,000	33,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	190	650	290	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
CFC-11	300	160	6,000	2,700	9,000	4,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
CFC-12	71	38	1,400	640	2,100	960	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	12,000	41,000	18,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
Chlorobromomethane	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	1,800	6,600	2,800	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
Chloroethane	15,000	8,600	320,000	150,000	490,000	230,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
Chloroform	19	10	610	270	910	410	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
Chloromethane	340	200	7,400	3,500	11,000	5,300	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	110	62	2,300	1,100	3,500	1,600	ug/L	1	2	11	9	7 [7]	6 [6]	7 [7]	3	7	6
cis-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
Dibromomethane	450	230	9,000	3,900	13,000	5,900	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
Dichloromethane	9,100	5,000	190,000	88,000	280,000	130,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
Ethyl ether	44,000	24,000	900,000	410,000	1,400,000	620,000	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U [< 10 U]	< 10 U [< 10 U]	< 10 U [< 10 U]	< 10 U	< 10 U	< 10 U
Ethylbenzene	110	60	3,600	1,600	5,400	2,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
Hexachloroethane	130	64	3,900	1,600	5,900	2,500	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
Iodomethane	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
Isopropyl benzene	26	13	810	360	1,200	540	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
m&p-Xylene	--	--	--	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U [< 2 U]	< 2 U [< 2 U]	< 2 U [< 2 U]	< 2 U	< 2 U	< 2 U
Methyl tert-butyl ether	10,000	5,300	320,000	150,000	490,000	220,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
Naphthalene	190	100	6,200	2,700	9,300	4,100	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U
N-Butylbenzene	2,000	1,100	12,000	12,000	12,000	12,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
N-Propylbenzene	10,000	5,400	52,000	31,000	52,000	46,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
o-Xylene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
Styrene	1,400	740	45,000	20,000	67,000	30,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
tert-Butylbenzene	3.4	1.8	67	29	100	44	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	1,500	5,000	2,200	ug/L	5	6	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	1
Tetrahydrofuran	1,300,000	690,000	27,000,000	12,000,000	41,000,000	19,000,000	ug/L	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U [< 90 U]					

Table 2
Summary of 2023 Groundwater Analytical Results
2023 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	NR Fiero SSVIAC <50k BASE	NR Fiero SSVIAC >50k SOG	NR Fiero SSVIAC >50k BASE	Units	MW-08-21 3/7/2023 MW-08-21_GW-030723	MW-08-21 6/8/2023 MW-08-21_GW-060823	MW-08-21 8/28/2023 MW-08-21_GW-082823	MW-08-21 11/30/2023 MW-08-21_GW-113023	MW-09-22 3/6/2023 MW-09-22_GW-030623	MW-09-22 6/8/2023 MW-09-22_GW-060823	MW-09-22 9/7/2023 MW-09-22_GW-090723	MW-09-22 11/30/2023 MW-09-22_GW-113023	MW-13-22 3/7/2023 MW-13-22_GW-030723	MW-13-22 6/6/2023 MW-13-22_GW-060623
Volatile Organics																	
1,1,1,2-Tetrachloroethane	180	93	5,700	2,400	8,500	3,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	22,000	11,000	210,000	92,000	310,000	140,000	ug/L	3	3	2	2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	130	66	4,100	1,800	6,200	2,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-Trichloroethane	21	11	410	180	620	280	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	160	88	5,300	2,400	8,000	3,600	ug/L	9	4	6	2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	410	220	8,300	3,800	13,000	5,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trichlorobenzene	4,100	2,100	18,000	18,000	18,000	18,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	91	47	1,800	790	2,700	1,200	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trimethylbenzene	2,000	1,100	41,000	18,000	61,000	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	270	130	5,100	2,200	7,700	3,300	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	1,100	590	22,000	9,900	34,000	15,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	0.029	0.061	0.042	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	110	370	160	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	19,000	9,900	160,000	160,000	160,000	160,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane	50	27	1,600	750	2,500	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloropropane	100	56	2,100	950	3,200	1,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3,5-Trimethylbenzene	800	420	16,000	7,000	24,000	10,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	130	70	2,700	1,200	4,000	1,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	310	160	9,800	4,300	15,000	6,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2-Butanone	4,000,000	2,200,000	59,000,000	27,000,000	88,000,000	40,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
2-Hexanone	24,000	12,000	490,000	220,000	740,000	320,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2-Methylnaphthalene	3,500	1,800	25,000	25,000	25,000	25,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	9,500,000	19,000,000	14,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Acetone	32,000,000	18,000,000	240,000,000	110,000,000	360,000,000	160,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Acrylonitrile	120	67	4,100	1,900	6,200	2,900	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Benzene	34	18	1,100	510	1,700	760	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromobenzene	3,300	1,700	66,000	29,000	99,000	43,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	760	2,600	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	6,400	3,200	200,000	83,000	300,000	120,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	59	33	1,200	580	1,900	860	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Disulfide	2,200	1,200	46,000	22,000	70,000	33,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	190	650	290	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	1	1	< 1 U	2 [2]	< 1 U	< 1 U
CFC-11	300	160	6,000	2,700	9,000	4,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	71	38	1,400	640	2,100	960	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	12,000	41,000	18,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorobromomethane	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	1,800	6,600	2,800	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15,000	8,600	320,000	150,000	490,000	230,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	19	10	610	270	910	410	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloromethane	340	200	7,400	3,500	11,000	5,300	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	110	62	2,300	1,100	3,500	1,600	ug/L	11	4	9	2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Dibromomethane	450	230	9,000	3,900	13,000	5,900	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dichloromethane	9,100	5,000	190,000	88,000	280,000	130,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Ethyl ether	44,000	24,000	900,000	410,000	1,400,000	620,000	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Ethylbenzene	110	60	3,600	1,600	5,400	2,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Hexachloroethane	130	64	3,900	1,600	5,900	2,500	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Iodomethane	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropyl benzene	26	13	810	360	1,200	540	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
m&p-Xylene	--	--	--	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Methyl tert-butyl ether	10,000	5,300	320,000	150,000	490,000	220,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Naphthalene	190	100	6,200	2,700	9,300	4,100	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
N-Butylbenzene	2,000	1,100	12,000	12,000	12,000	12,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
N-Propylbenzene	10,000	5,400	52,000	31,000	52,000	46,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
o-Xylene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Styrene	1,400	740	45,000	20,000	67,000	30,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
tert-Butylbenzene	3.4	1.8	67	29	100	44	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	1,500	5,000	2,200	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	148	122	78	169 [191]	< 1 U	< 1 U
Tetrahydrofuran	1,300,000	690,000	27,000,000	12,000,000	41,000,000	19,000,000	ug/L	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U
Toluene	56,000	30,000	530,000	250,000	530,000	380,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes	3,000	1,600	60,000	27,000	91,000	41,000	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
trans-1,2-Dichloroethene	480	260	9,800	4,500	15,000	6,700	ug/L	1	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,4-Dichloro-2-butene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	15	8.1	210														

Table 2
Summary of 2023 Groundwater Analytical Results
2023 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	NR Fiero SSVIAC <50k BASE	NR Fiero SSVIAC >50k SOG	NR Fiero SSVIAC >50k BASE		MW-13-22 8/30/2023 MW-13-22_GW-083023	MW-13-22 11/29/2023 MW-13-22_GW_112923	MW-14-22 3/7/2023 MW-14-22_GW-030723	MW-14-22 6/6/2023 MW-14-22_GW-060623	MW-14-22 8/30/2023 MW-14-22_GW-083023	MW-14-22 11/29/2023 MW-14-22_GW_112923	MW-15-22 3/7/2023 MW-15-22_GW-030723	MW-15-22 6/6/2023 MW-15-22_GW-060623	MW-15-22 8/29/2023 MW-15-22_GW-082923	MW-15-22 11/29/2023 MW-15-22_GW_112923
Volatile Organics																	
1,1,1,2-Tetrachloroethane	180	93	5,700	2,400	8,500	3,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,1,1-Trichloroethane	22,000	11,000	210,000	92,000	310,000	140,000	ug/L	< 1 U	< 1 U	6	13	10 Y	10 Y	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,1,2,2-Tetrachloroethane	130	66	4,100	1,800	6,200	2,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,1,2-Trichloroethane	21	11	410	180	620	280	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,1-Dichloroethane	160	88	5,300	2,400	8,000	3,600	ug/L	< 1 U	< 1 U	< 1 U	2	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,1-Dichloroethene	410	220	8,300	3,800	13,000	5,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,2,3-Trichlorobenzene	4,100	2,100	18,000	18,000	18,000	18,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
1,2,3-Trichloropropane	91	47	1,800	790	2,700	1,200	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,2,3-Trimethylbenzene	2,000	1,100	41,000	18,000	61,000	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,2,4-Trichlorobenzene	270	130	5,100	2,200	7,700	3,300	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
1,2,4-Trimethylbenzene	1,100	590	22,000	9,900	34,000	15,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	0.029	0.061	0.042	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
1,2-Dibromoethane	8	4	250	110	370	160	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,2-Dichlorobenzene	19,000	9,900	160,000	160,000	160,000	160,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,2-Dichloroethane	50	27	1,600	750	2,500	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,2-Dichloropropane	100	56	2,100	950	3,200	1,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,3,5-Trimethylbenzene	800	420	16,000	7,000	24,000	10,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,3-Dichlorobenzene	130	70	2,700	1,200	4,000	1,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
1,4-Dichlorobenzene	310	160	9,800	4,300	15,000	6,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
2-Butanone	4,000,000	2,200,000	59,000,000	27,000,000	88,000,000	40,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 250 UY	< 250 UY	< 25 U [< 25 U]	< 25 U [< 25 U]	< 25 U [< 25 U]	< 25 U [< 25 U]
2-Hexanone	24,000	12,000	490,000	220,000	740,000	320,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 500 UY	< 500 UY	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U [< 50 U]
2-Methylnaphthalene	3,500	1,800	25,000	25,000	25,000	25,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	9,500,000	19,000,000	14,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 500 UY	< 500 UY	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U [< 50 U]
Acetone	32,000,000	18,000,000	240,000,000	110,000,000	360,000,000	160,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 500 UY	< 500 UY	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U [< 50 U]
Acrylonitrile	120	67	4,100	1,900	6,200	2,900	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 20 UY	< 20 UY	< 2 U [< 2 U]	< 2 U [< 2 U]	< 2 U [< 2 U]	< 2 U [< 2 U]
Benzene	34	18	1,100	510	1,700	760	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
Bromobenzene	3,300	1,700	66,000	29,000	99,000	43,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
Bromodichloromethane	60	31	1,700	760	2,600	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
Bromoform	6,400	3,200	200,000	83,000	300,000	120,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
Bromomethane	59	33	1,200	580	1,900	860	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
Carbon Disulfide	2,200	1,200	46,000	22,000	70,000	33,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
Carbon Tetrachloride	14	7.2	440	190	650	290	ug/L	< 1 U	< 1 U	3	5	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
CFC-11	300	160	6,000	2,700	9,000	4,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
CFC-12	71	38	1,400	640	2,100	960	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
Chlorobenzene	1,300	720	27,000	12,000	41,000	18,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
Chlorobromomethane	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
Chlorodibromomethane	58	29	4,400	1,800	6,600	2,800	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	140 Y	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
Chloroethane	15,000	8,600	320,000	150,000	490,000	230,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
Chloroform	19	10	610	270	910	410	ug/L	< 1 U	< 1 U	1	1	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
Chloromethane	340	200	7,400	3,500	11,000	5,300	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
cis-1,2-Dichloroethene	110	62	2,300	1,100	3,500	1,600	ug/L	< 1 U	< 1 U	8	5	20 Y	30 Y	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
cis-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
Dibromomethane	450	230	9,000	3,900	13,000	5,900	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
Dichloromethane	9,100	5,000	190,000	88,000	280,000	130,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
Ethyl ether	44,000	24,000	900,000	410,000	1,400,000	620,000	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 100 UY	< 100 UY	< 10 U [< 10 U]	< 10 U [< 10 U]	< 10 U [< 10 U]	< 10 U [< 10 U]
Ethylbenzene	110	60	3,600	1,600	5,400	2,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
Hexachloroethane	130	64	3,900	1,600	5,900	2,500	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
Iodomethane	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
Isopropyl benzene	26	13	810	360	1,200	540	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
m&p-Xylene	--	--	--	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 20 UY	< 20 UY	< 2 U [< 2 U]	< 2 U [< 2 U]	< 2 U [< 2 U]	< 2 U [< 2 U]
Methyl tert-butyl ether	10,000	5,300	320,000	150,000	490,000	220,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
Naphthalene	190	100	6,200	2,700	9,300	4,100	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 50 UY	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U [< 5 U]
N-Butylbenzene	2,000	1,100	12,000	12,000	12,000	12,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
N-Propylbenzene	10,000	5,400	52,000	31,000	52,000	46,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
o-Xylene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 10 UY	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U [< 1 U]
Styrene	1,400	740	45,000	20,000	67,000	30,000	ug/L										

Table 2
Summary of 2023 Groundwater Analytical Results
2023 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	NR Fiero SSVIAC <50k BASE	NR Fiero SSVIAC >50k SOG	NR Fiero SSVIAC >50k BASE		MW-16-22 4/7/2023 MW-16-22_GW-040723	MW-16-22 6/6/2023 MW-16-22_GW-060623	MW-16-22 9/7/2023 MW-16-22_GW-090723	MW-16-22 11/29/2023 MW-16-22_GW_112923	MWF15-01 6/7/2023 MWF15-01_GW-060723	MWF15-01 12/4/2023 MWF15-01_GW-120423	MWF16-05 3/8/2023 MWF16-05_GW-030823	MWF16-05 6/8/2023 MWF16-05_GW-060823	MWF16-05 9/7/2023 MWF16-05_GW-090723
Volatile Organics																
1,1,1,2-Tetrachloroethane	180	93	5,700	2,400	8,500	3,700	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,1,1-Trichloroethane	22,000	11,000	210,000	92,000	310,000	140,000	ug/L	< 10 UY	< 10 UY	< 10 UY	2	4	5	4	< 20 UY	< 20 UY
1,1,2,2-Tetrachloroethane	130	66	4,100	1,800	6,200	2,600	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,1,2-Trichloroethane	21	11	410	180	620	280	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,1-Dichloroethane	160	88	5,300	2,400	8,000	3,600	ug/L	< 10 UY	< 10 UY	< 10 UY	1	< 1 U	1	< 1 U	< 20 UY	< 20 UY
1,1-Dichloroethene	410	220	8,300	3,800	13,000	5,700	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,2,3-Trichlorobenzene	4,100	2,100	18,000	18,000	18,000	18,000	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
1,2,3-Trichloropropane	91	47	1,800	790	2,700	1,200	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,2,3-Trimethylbenzene	2,000	1,100	41,000	18,000	61,000	27,000	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,2,4-Trichlorobenzene	270	130	5,100	2,200	7,700	3,300	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
1,2,4-Trimethylbenzene	1,100	590	22,000	9,900	34,000	15,000	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	0.029	0.061	0.042	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
1,2-Dibromoethane	8	4	250	110	370	160	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,2-Dichlorobenzene	19,000	9,900	160,000	160,000	160,000	160,000	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,2-Dichloroethane	50	27	1,600	750	2,500	1,100	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,2-Dichloropropane	100	56	2,100	950	3,200	1,400	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,3,5-Trimethylbenzene	800	420	16,000	7,000	24,000	10,000	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,3-Dichlorobenzene	130	70	2,700	1,200	4,000	1,700	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
1,4-Dichlorobenzene	310	160	9,800	4,300	15,000	6,400	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
2-Butanone	4,000,000	2,200,000	59,000,000	27,000,000	88,000,000	40,000,000	ug/L	< 250 UY	< 250 UY	< 250 UY	< 25 U	< 25 U	< 25 U	< 25 U	< 500 UY	< 500 UY
2-Hexanone	24,000	12,000	490,000	220,000	740,000	320,000	ug/L	< 500 UY	< 500 UY	< 500 UY	< 50 U	< 50 U	< 50 U	< 50 U	< 1000 UY	< 1000 UY
2-Methylnaphthalene	3,500	1,800	25,000	25,000	25,000	25,000	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	9,500,000	19,000,000	14,000,000	ug/L	< 500 UY	< 500 UY	< 500 UY	< 50 U	< 50 U	< 50 U	< 50 U	< 1000 UY	< 1000 UY
Acetone	32,000,000	18,000,000	240,000,000	110,000,000	360,000,000	160,000,000	ug/L	< 500 UY	< 500 UY	< 500 UY	< 50 U	< 50 U	< 50 U	< 50 U	< 1000 UY	< 1000 UY
Acrylonitrile	120	67	4,100	1,900	6,200	2,900	ug/L	< 20 UY	< 20 UY	< 20 UY	< 2 U	< 2 U	< 2 U	< 2 U	< 40 UY	< 40 UY
Benzene	34	18	1,100	510	1,700	760	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Bromobenzene	3,300	1,700	66,000	29,000	99,000	43,000	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Bromodichloromethane	60	31	1,700	760	2,600	1,100	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Bromoform	6,400	3,200	200,000	83,000	300,000	120,000	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Bromomethane	59	33	1,200	580	1,900	860	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
Carbon Disulfide	2,200	1,200	46,000	22,000	70,000	33,000	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
Carbon Tetrachloride	14	7.2	440	190	650	290	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
CFC-11	300	160	6,000	2,700	9,000	4,000	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
CFC-12	71	38	1,400	640	2,100	960	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
Chlorobenzene	1,300	720	27,000	12,000	41,000	18,000	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Chlorobromomethane	--	--	--	--	--	--	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Chlorodibromomethane	58	29	4,400	1,800	6,600	2,800	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
Chloroethane	15,000	8,600	320,000	150,000	490,000	230,000	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
Chloroform	19	10	610	270	910	410	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Chloromethane	340	200	7,400	3,500	11,000	5,300	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
cis-1,2-Dichloroethene	110	62	2,300	1,100	3,500	1,600	ug/L	20 Y	10 Y	120 Y	8	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
cis-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Dibromomethane	450	230	9,000	3,900	13,000	5,900	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
Dichloromethane	9,100	5,000	190,000	88,000	280,000	130,000	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
Ethyl ether	44,000	24,000	900,000	410,000	1,400,000	620,000	ug/L	< 100 UY	< 100 UY	< 100 UY	< 10 U	< 10 U	< 10 U	< 10 U	< 200 UY	< 200 UY
Ethylbenzene	110	60	3,600	1,600	5,400	2,400	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Hexachloroethane	130	64	3,900	1,600	5,900	2,500	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
Iodomethane	--	--	--	--	--	--	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Isopropyl benzene	26	13	810	360	1,200	540	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
m&p-Xylene	--	--	--	--	--	--	ug/L	< 20 UY	< 20 UY	< 20 UY	< 2 U	< 2 U	< 2 U	< 2 U	< 40 UY	< 40 UY
Methyl tert-butyl ether	10,000	5,300	320,000	150,000	490,000	220,000	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
Naphthalene	190	100	6,200	2,700	9,300	4,100	ug/L	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 100 UY	< 100 UY
N-Butylbenzene	2,000	1,100	12,000	12,000	12,000	12,000	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
N-Propylbenzene	10,000	5,400	52,000	31,000	52,000	46,000	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
o-Xylene	--	--	--	--	--	--	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Styrene	1,400	740	45,000	20,000	67,000	30,000	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
tert-Butylbenzene	3.4	1.8	67	29	100	44	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Tetrachloroethene	250	130	3,400	1,500	5,000	2,200	ug/L	300 Y	180 Y	170 Y	94	< 1 U	< 1 U	550 Y	500 Y	490 Y
Tetrahydrofuran	1,300,000	690,000	27,000,000	12,000,000	41,000,000	19,000,000	ug/L	< 900 UY	< 900 UY	< 900 UY	< 90 U	< 90 U	< 90 U	< 90 U	< 1800 UY	< 1800 UY
Toluene	56,000	30,000	530,000	250,000	530,000	380,000	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Total Xylenes	3,000	1,600	60,000	27,000	91,000	41,000	ug/L	< 20 UY	< 20 UY	< 20 UY	< 2 U	< 2 U	< 2 U	< 2 U	< 40 UY	< 40 UY
trans-1,2-Dichloroethene	480	260	9,800	4,500	15,000	6,700	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
trans-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
trans-1,4-Dichloro-2-butene	--	--	--	--	--	--	ug/L	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 20 UY	< 20 UY
Trichloroethene	15	8.1	210	93	310	1										

Table 2
Summary of 2023 Groundwater Analytical Results
2023 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	NR Fiero SSVIAC <50k BASE	NR Fiero SSVIAC >50k SOG	NR Fiero SSVIAC >50k BASE	Units	MWF16-05 11/30/2023 MWF16-05_GW-113023	MWF16-06 6/9/2023 MWF16-06_GW-060923	MWF16-06 11/28/2023 MWF16-06-GW_112823	MWF16-07 6/7/2023 MWF16-07_GW-060723	MWF16-07 12/5/2023 MWF16-07_GW-120523	MWF16-12 6/8/2023 MWF16-12_GW-060823	MWF16-12 11/29/2023 MWF16-12-GW_112923	MWF16-15 6/7/2023 MWF16-15_GW-060723	MWF16-15 12/4/2023 MWF16-15_GW-120423
Volatile Organics																
1,1,1,2-Tetrachloroethane	180	93	5,700	2,400	8,500	3,700	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	22,000	11,000	210,000	92,000	310,000	140,000	ug/L	< 10 UY	93	100	< 1 U	< 1 U	< 1 U	< 1 U	11	11
1,1,2,2-Tetrachloroethane	130	66	4,100	1,800	6,200	2,600	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-Trichloroethane	21	11	410	180	620	280	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	160	88	5,300	2,400	8,000	3,600	ug/L	< 10 UY	52	32	< 1 U	< 1 U	< 1 U	< 1 U	2	2
1,1-Dichloroethene	410	220	8,300	3,800	13,000	5,700	ug/L	< 10 UY	5	4	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trichlorobenzene	4,100	2,100	18,000	18,000	18,000	18,000	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	91	47	1,800	790	2,700	1,200	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trimethylbenzene	2,000	1,100	41,000	18,000	61,000	27,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	270	130	5,100	2,200	7,700	3,300	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	1,100	590	22,000	9,900	34,000	15,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	0.029	0.061	0.042	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	110	370	160	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	19,000	9,900	160,000	160,000	160,000	160,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane	50	27	1,600	750	2,500	1,100	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloropropane	100	56	2,100	950	3,200	1,400	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3,5-Trimethylbenzene	800	420	16,000	7,000	24,000	10,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	130	70	2,700	1,200	4,000	1,700	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	310	160	9,800	4,300	15,000	6,400	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2-Butanone	4,000,000	2,200,000	59,000,000	27,000,000	88,000,000	40,000,000	ug/L	< 250 UY	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
2-Hexanone	24,000	12,000	490,000	220,000	740,000	320,000	ug/L	< 500 UY	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2-Methylnaphthalene	3,500	1,800	25,000	25,000	25,000	25,000	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	9,500,000	19,000,000	14,000,000	ug/L	< 500 UY	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Acetone	32,000,000	18,000,000	240,000,000	110,000,000	360,000,000	160,000,000	ug/L	< 500 UY	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Acrylonitrile	120	67	4,100	1,900	6,200	2,900	ug/L	< 20 UY	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Benzene	34	18	1,100	510	1,700	760	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromobenzene	3,300	1,700	66,000	29,000	99,000	43,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	760	2,600	1,100	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	6,400	3,200	200,000	83,000	300,000	120,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	59	33	1,200	580	1,900	860	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Disulfide	2,200	1,200	46,000	22,000	70,000	33,000	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	190	650	290	ug/L	< 10 UY	7	9	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-11	300	160	6,000	2,700	9,000	4,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	71	38	1,400	640	2,100	960	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	12,000	41,000	18,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorobromomethane	--	--	--	--	--	--	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	1,800	6,600	2,800	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15,000	8,600	320,000	150,000	490,000	230,000	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	19	10	610	270	910	410	ug/L	< 10 UY	9	9	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloromethane	340	200	7,400	3,500	11,000	5,300	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	110	62	2,300	1,100	3,500	1,600	ug/L	< 10 UY	18	7	< 1 U	< 1 U	< 1 U	< 1 U	9	7
cis-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Dibromomethane	450	230	9,000	3,900	13,000	5,900	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dichloromethane	9,100	5,000	190,000	88,000	280,000	130,000	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Ethyl ether	44,000	24,000	900,000	410,000	1,400,000	620,000	ug/L	< 100 UY	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Ethylbenzene	110	60	3,600	1,600	5,400	2,400	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Hexachloroethane	130	64	3,900	1,600	5,900	2,500	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Iodomethane	--	--	--	--	--	--	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropyl benzene	26	13	810	360	1,200	540	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
m&p-Xylene	--	--	--	--	--	--	ug/L	< 20 UY	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Methyl tert-butyl ether	10,000	5,300	320,000	150,000	490,000	220,000	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Naphthalene	190	100	6,200	2,700	9,300	4,100	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
N-Butylbenzene	2,000	1,100	12,000	12,000	12,000	12,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
N-Propylbenzene	10,000	5,400	52,000	31,000	52,000	46,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
o-Xylene	--	--	--	--	--	--	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Styrene	1,400	740	45,000	20,000	67,000	30,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
tert-Butylbenzene	3.4	1.8	67	29	100	44	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	1,500	5,000	2,200	ug/L	250 Y	36	44	< 1 U	< 1 U	25	9	< 1 U	< 1 U
Tetrahydrofuran	1,300,000	690,000	27,000,000	12,000,000	41,000,000	19,000,000	ug/L	< 900 UY	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U
Toluene	56,000	30,000	530,000	250,000	530,000	380,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes	3,000	1,600	60,000	27,000	91,000	41,000	ug/L	< 20 UY	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
trans-1,2-Dichloroethene	480	260	9,800	4,500	15,000	6,700	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,4-Dichloro-2-butene	--	--	--	--	--	--	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	15	8.1	210	93	310	140	ug/L	< 10 UY	5	5	< 1 U	< 1 U	< 1 U	< 1 U	4	4
Vinyl Chloride	2.2	1.2	260	120	390	180	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U

Table 2
Summary of 2023 Groundwater Analytical Results
2023 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	NR Fiero SSVIAC <50k BASE	NR Fiero SSVIAC >50k SOG	NR Fiero SSVIAC >50k BASE	Units	MWF16-16 3/6/2023 MWF16-16_GW-030623	MWF16-16 6/9/2023 MWF16-16_GW-060923	MWF16-16 9/7/2023 MWF16-16_GW-090723	MWF16-16 11/28/2023 MWF16-16_GW_112823	MWF16-17 6/8/2023 MWF16-17_GW-060823	MWF16-17 11/29/2023 MWF16-17-GW_112923	MWF16-18 3/7/2023 MWF16-18_GW-030823	MWF16-18 6/8/2023 MWF16-18_GW-060823	MWF16-18 9/7/2023 MWF16-18_GW-090723
Volatile Organics																
1,1,1,2-Tetrachloroethane	180	93	5,700	2,400	8,500	3,700	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,1,1-Trichloroethane	22,000	11,000	210,000	92,000	310,000	140,000	ug/L	5	< 10 UY	< 10 UY	< 10 UY	2	2	< 10 UY	< 10 UY	< 10 UY
1,1,2,2-Tetrachloroethane	130	66	4,100	1,800	6,200	2,600	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,1,2-Trichloroethane	21	11	410	180	620	280	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,1-Dichloroethane	160	88	5,300	2,400	8,000	3,600	ug/L	6	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,1-Dichloroethene	410	220	8,300	3,800	13,000	5,700	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,2,3-Trichlorobenzene	4,100	2,100	18,000	18,000	18,000	18,000	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
1,2,3-Trichloropropane	91	47	1,800	790	2,700	1,200	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,2,3-Trimethylbenzene	2,000	1,100	41,000	18,000	61,000	27,000	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,2,4-Trichlorobenzene	270	130	5,100	2,200	7,700	3,300	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
1,2,4-Trimethylbenzene	1,100	590	22,000	9,900	34,000	15,000	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	0.029	0.061	0.042	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
1,2-Dibromoethane	8	4	250	110	370	160	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,2-Dichlorobenzene	19,000	9,900	160,000	160,000	160,000	160,000	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,2-Dichloroethane	50	27	1,600	750	2,500	1,100	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,2-Dichloropropane	100	56	2,100	950	3,200	1,400	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,3,5-Trimethylbenzene	800	420	16,000	7,000	24,000	10,000	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,3-Dichlorobenzene	130	70	2,700	1,200	4,000	1,700	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
1,4-Dichlorobenzene	310	160	9,800	4,300	15,000	6,400	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
2-Butanone	4,000,000	2,200,000	59,000,000	27,000,000	88,000,000	40,000,000	ug/L	< 25 U	< 250 UY	< 250 UY	< 250 UY	< 25 U	< 25 U	< 250 UY	< 250 UY	< 250 UY
2-Hexanone	24,000	12,000	490,000	220,000	740,000	320,000	ug/L	< 50 U	< 500 UY	< 500 UY	< 500 UY	< 50 U	< 50 U	< 500 UY	< 500 UY	< 500 UY
2-Methylnaphthalene	3,500	1,800	25,000	25,000	25,000	25,000	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	9,500,000	19,000,000	14,000,000	ug/L	< 50 U	< 500 UY	< 500 UY	< 500 UY	< 50 U	< 50 U	< 500 UY	< 500 UY	< 500 UY
Acetone	32,000,000	18,000,000	240,000,000	110,000,000	360,000,000	160,000,000	ug/L	< 50 U	< 500 UY	< 500 UY	< 500 UY	< 50 U	< 50 U	< 500 UY	< 500 UY	< 500 UY
Acrylonitrile	120	67	4,100	1,900	6,200	2,900	ug/L	< 2 U	< 20 UY	< 20 UY	< 20 UY	< 2 U	< 2 U	< 20 UY	< 20 UY	< 20 UY
Benzene	34	18	1,100	510	1,700	760	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Bromobenzene	3,300	1,700	66,000	29,000	99,000	43,000	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Bromodichloromethane	60	31	1,700	760	2,600	1,100	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Bromoform	6,400	3,200	200,000	83,000	300,000	120,000	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Bromomethane	59	33	1,200	580	1,900	860	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
Carbon Disulfide	2,200	1,200	46,000	22,000	70,000	33,000	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
Carbon Tetrachloride	14	7.2	440	190	650	290	ug/L	1	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
CFC-11	300	160	6,000	2,700	9,000	4,000	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
CFC-12	71	38	1,400	640	2,100	960	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
Chlorobenzene	1,300	720	27,000	12,000	41,000	18,000	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Chlorobromomethane	--	--	--	--	--	--	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Chlorodibromomethane	58	29	4,400	1,800	6,600	2,800	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
Chloroethane	15,000	8,600	320,000	150,000	490,000	230,000	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
Chloroform	19	10	610	270	910	410	ug/L	1	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Chloromethane	340	200	7,400	3,500	11,000	5,300	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
cis-1,2-Dichloroethene	110	62	2,300	1,100	3,500	1,600	ug/L	8	20 Y	10 Y	20 Y	< 1 U	< 1 U	70 Y	110 Y	130 Y
cis-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Dibromomethane	450	230	9,000	3,900	13,000	5,900	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
Dichloromethane	9,100	5,000	190,000	88,000	280,000	130,000	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
Ethyl ether	44,000	24,000	900,000	410,000	1,400,000	620,000	ug/L	< 10 U	< 100 UY	< 100 UY	< 100 UY	< 10 U	< 10 U	< 100 UY	< 100 UY	< 100 UY
Ethylbenzene	110	60	3,600	1,600	5,400	2,400	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Hexachloroethane	130	64	3,900	1,600	5,900	2,500	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
Iodomethane	--	--	--	--	--	--	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Isopropyl benzene	26	13	810	360	1,200	540	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
m&p-Xylene	--	--	--	--	--	--	ug/L	< 2 U	< 20 UY	< 20 UY	< 20 UY	< 2 U	< 2 U	< 20 UY	< 20 UY	< 20 UY
Methyl tert-butyl ether	10,000	5,300	320,000	150,000	490,000	220,000	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
Naphthalene	190	100	6,200	2,700	9,300	4,100	ug/L	< 5 U	< 50 UY	< 50 UY	< 50 UY	< 5 U	< 5 U	< 50 UY	< 50 UY	< 50 UY
N-Butylbenzene	2,000	1,100	12,000	12,000	12,000	12,000	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
N-Propylbenzene	10,000	5,400	52,000	31,000	52,000	46,000	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
o-Xylene	--	--	--	--	--	--	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Styrene	1,400	740	45,000	20,000	67,000	30,000	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
tert-Butylbenzene	3.4	1.8	67	29	100	44	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Tetrachloroethene	250	130	3,400	1,500	5,000	2,200	ug/L	260 Y	400 Y	410 Y	440 Y	1	< 1 U	1,070 Y	1,040 Y	1,090 Y
Tetrahydrofuran	1,300,000	690,000	27,000,000	12,000,000	41,000,000	19,000,000	ug/L	< 90 U	< 900 UY	< 900 UY	< 900 UY	< 90 U	< 90 U	< 900 UY	< 900 UY	< 900 UY
Toluene	56,000	30,000	530,000	250,000	530,000	380,000	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
Total Xylenes	3,000	1,600	60,000	27,000	91,000	41,000	ug/L	< 2 U	< 20 UY	< 20 UY	< 20 UY	< 2 U	< 2 U	< 20 UY	< 20 UY	< 20 UY
trans-1,2-Dichloroethene	480	260	9,800	4,500	15,000	6,700	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
trans-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY	< 10 UY	< 10 UY
trans-1,4-Dichloro-2-butene	--	--	--	--	--	--	ug/L	< 1 U	< 10 UY	< 10 UY	< 10 UY	< 1 U	< 1 U	< 10 UY		

Table 2
Summary of 2023 Groundwater Analytical Results
2023 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	NR Fiero SSVIAC <50k BASE	NR Fiero SSVIAC >50k SOG	NR Fiero SSVIAC >50k BASE	Units	MWF16-18 11/29/2023 MWF16-18-GW_112923	MWF16-22 6/9/2023 MWF16-22_GW-060923	MWF16-22 11/28/2023 MWF16-22_GW_112823	MWF16-23 3/7/2023 MWF16-23_GW-030723	MWF16-23 6/6/2023 MWF16-23_GW-060623	MWF16-23 8/29/2023 MWF16-23_GW-082923	MWF16-23 11/30/2023 MWF16-23_GW-113023	MWF16-25 6/8/2023 MWF16-25_GW-060823	MWF16-25 11/29/2023 MWF16-25_GW_112923
Volatile Organics																
1,1,1,2-Tetrachloroethane	180	93	5,700	2,400	8,500	3,700	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	22,000	11,000	210,000	92,000	310,000	140,000	ug/L	< 10 UY	1	5	12	13	8	8	4	4
1,1,2,2-Tetrachloroethane	130	66	4,100	1,800	6,200	2,600	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-Trichloroethane	21	11	410	180	620	280	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	160	88	5,300	2,400	8,000	3,600	ug/L	< 10 UY	2	5	6	7	4	3	3	3
1,1-Dichloroethene	410	220	8,300	3,800	13,000	5,700	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trichlorobenzene	4,100	2,100	18,000	18,000	18,000	18,000	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	91	47	1,800	790	2,700	1,200	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trimethylbenzene	2,000	1,100	41,000	18,000	61,000	27,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	270	130	5,100	2,200	7,700	3,300	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	1,100	590	22,000	9,900	34,000	15,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	0.029	0.061	0.042	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	110	370	160	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	19,000	9,900	160,000	160,000	160,000	160,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane	50	27	1,600	750	2,500	1,100	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloropropane	100	56	2,100	950	3,200	1,400	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3,5-Trimethylbenzene	800	420	16,000	7,000	24,000	10,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	130	70	2,700	1,200	4,000	1,700	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	310	160	9,800	4,300	15,000	6,400	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2-Butanone	4,000,000	2,200,000	59,000,000	27,000,000	88,000,000	40,000,000	ug/L	< 250 UY	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
2-Hexanone	24,000	12,000	490,000	220,000	740,000	320,000	ug/L	< 500 UY	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2-Methylnaphthalene	3,500	1,800	25,000	25,000	25,000	25,000	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	9,500,000	19,000,000	14,000,000	ug/L	< 500 UY	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Acetone	32,000,000	18,000,000	240,000,000	110,000,000	360,000,000	160,000,000	ug/L	< 500 UY	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Acrylonitrile	120	67	4,100	1,900	6,200	2,900	ug/L	< 20 UY	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Benzene	34	18	1,100	510	1,700	760	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromobenzene	3,300	1,700	66,000	29,000	99,000	43,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	760	2,600	1,100	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	6,400	3,200	200,000	83,000	300,000	120,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	59	33	1,200	580	1,900	860	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Disulfide	2,200	1,200	46,000	22,000	70,000	33,000	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	190	650	290	ug/L	< 10 UY	< 1 U	1	< 1 U	< 1 U	< 1 U	< 1 U	1	1
CFC-11	300	160	6,000	2,700	9,000	4,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	71	38	1,400	640	2,100	960	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	12,000	41,000	18,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorobromomethane	--	--	--	--	--	--	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	1,800	6,600	2,800	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15,000	8,600	320,000	150,000	490,000	230,000	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	19	10	610	270	910	410	ug/L	< 10 UY	< 1 U	1	< 1 U	< 1 U	< 1 U	< 1 U	3	3
Chloromethane	340	200	7,400	3,500	11,000	5,300	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	110	62	2,300	1,100	3,500	1,600	ug/L	120 Y	14	54	7	8	3	2	40	41
cis-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Dibromomethane	450	230	9,000	3,900	13,000	5,900	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dichloromethane	9,100	5,000	190,000	88,000	280,000	130,000	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Ethyl ether	44,000	24,000	900,000	410,000	1,400,000	620,000	ug/L	< 100 UY	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Ethylbenzene	110	60	3,600	1,600	5,400	2,400	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Hexachloroethane	130	64	3,900	1,600	5,900	2,500	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Iodomethane	--	--	--	--	--	--	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropyl benzene	26	13	810	360	1,200	540	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
m&p-Xylene	--	--	--	--	--	--	ug/L	< 20 UY	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Methyl tert-butyl ether	10,000	5,300	320,000	150,000	490,000	220,000	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Naphthalene	190	100	6,200	2,700	9,300	4,100	ug/L	< 50 UY	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
N-Butylbenzene	2,000	1,100	12,000	12,000	12,000	12,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
N-Propylbenzene	10,000	5,400	52,000	31,000	52,000	46,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
o-Xylene	--	--	--	--	--	--	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Styrene	1,400	740	45,000	20,000	67,000	30,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
tert-Butylbenzene	3.4	1.8	67	29	100	44	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	1,500	5,000	2,200	ug/L	1,040 Y	77	285 E	< 1 U	< 1 U	< 1 U	1	< 1 U	< 1 U
Tetrahydrofuran	1,300,000	690,000	27,000,000	12,000,000	41,000,000	19,000,000	ug/L	< 900 UY	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U
Toluene	56,000	30,000	530,000	250,000	530,000	380,000	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes	3,000	1,600	60,000	27,000	91,000	41,000	ug/L	< 20 UY	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
trans-1,2-Dichloroethene	480	260	9,800	4,500	15,000	6,700	ug/L	< 10 UY	< 1 U	2	2	3	1	< 1 U	3	4
trans-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,4-Dichloro-2-butene	--	--	--	--	--	--	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	15	8.1	210	93	310	140	ug/L	30 Y	3	13	16	21	16	15	< 1 U	< 1 U
Vinyl Chloride	2.2	1.2	260	120	390	180	ug/L	< 10 UY	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U

Table 2
Summary of 2023 Groundwater Analytical Results
2023 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	NR Fiero SSVIAC <50k BASE	NR Fiero SSVIAC >50k SOG	NR Fiero SSVIAC >50k BASE	Units	MWF7-02 6/7/2023 MWF7-02_GW-060723	MWOS-08 3/8/2023 MWOS-08_GW-030823	MWOS-08 6/8/2023 MWOS-08_GW-060823	MWOS-08 8/29/2023 MWOS-08_GW-082923	MWOS-08 11/29/2023 MWOS-08_GW_112923	MWOS-09R 3/7/2023 MWOS-09R_GW-030723	MWOS-09R 6/8/2023 MWOS-09R_GW-060823	MWOS-09R 8/29/2023 MWOS-09R_GW-082923	MWOS-09R 11/30/2023 MWOS-09R_GW_113023
Volatile Organics																
1,1,1,2-Tetrachloroethane	180	93	5,700	2,400	8,500	3,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,1,1-Trichloroethane	22,000	11,000	210,000	92,000	310,000	140,000	ug/L	81	4	4	4	6	4	4 [4]	4	5 [5]
1,1,2,2-Tetrachloroethane	130	66	4,100	1,800	6,200	2,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,1,2-Trichloroethane	21	11	410	180	620	280	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,1-Dichloroethane	160	88	5,300	2,400	8,000	3,600	ug/L	15	< 1 U	1	1	1	4	3 [3]	3	4 [4]
1,1-Dichloroethene	410	220	8,300	3,800	13,000	5,700	ug/L	8	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,2,3-Trichlorobenzene	4,100	2,100	18,000	18,000	18,000	18,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
1,2,3-Trichloropropane	91	47	1,800	790	2,700	1,200	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,2,3-Trimethylbenzene	2,000	1,100	41,000	18,000	61,000	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,2,4-Trichlorobenzene	270	130	5,100	2,200	7,700	3,300	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
1,2,4-Trimethylbenzene	1,100	590	22,000	9,900	34,000	15,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	0.029	0.061	0.042	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
1,2-Dibromoethane	8	4	250	110	370	160	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,2-Dichlorobenzene	19,000	9,900	160,000	160,000	160,000	160,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,2-Dichloroethane	50	27	1,600	750	2,500	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,2-Dichloropropane	100	56	2,100	950	3,200	1,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,3,5-Trimethylbenzene	800	420	16,000	7,000	24,000	10,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,3-Dichlorobenzene	130	70	2,700	1,200	4,000	1,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
1,4-Dichlorobenzene	310	160	9,800	4,300	15,000	6,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
2-Butanone	4,000,000	2,200,000	59,000,000	27,000,000	88,000,000	40,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U [<lt; 25="" td="" u]<=""><td>< 25 U</td><td>< 25 U [<lt; 25="" td="" u]<=""></lt;></td></lt;>	< 25 U	< 25 U [<lt; 25="" td="" u]<=""></lt;>
2-Hexanone	24,000	12,000	490,000	220,000	740,000	320,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [<lt; 50="" td="" u]<=""><td>< 50 U</td><td>< 50 U [<lt; 50="" td="" u]<=""></lt;></td></lt;>	< 50 U	< 50 U [<lt; 50="" td="" u]<=""></lt;>
2-Methylnaphthalene	3,500	1,800	25,000	25,000	25,000	25,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	9,500,000	19,000,000	14,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [<lt; 50="" td="" u]<=""><td>< 50 U</td><td>< 50 U [<lt; 50="" td="" u]<=""></lt;></td></lt;>	< 50 U	< 50 U [<lt; 50="" td="" u]<=""></lt;>
Acetone	32,000,000	18,000,000	240,000,000	110,000,000	360,000,000	160,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [<lt; 50="" td="" u]<=""><td>< 50 U</td><td>< 50 U [<lt; 50="" td="" u]<=""></lt;></td></lt;>	< 50 U	< 50 U [<lt; 50="" td="" u]<=""></lt;>
Acrylonitrile	120	67	4,100	1,900	6,200	2,900	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U [<lt; 2="" td="" u]<=""><td>< 2 U</td><td>< 2 U [<lt; 2="" td="" u]<=""></lt;></td></lt;>	< 2 U	< 2 U [<lt; 2="" td="" u]<=""></lt;>
Benzene	34	18	1,100	510	1,700	760	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Bromobenzene	3,300	1,700	66,000	29,000	99,000	43,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Bromodichloromethane	60	31	1,700	760	2,600	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Bromoform	6,400	3,200	200,000	83,000	300,000	120,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Bromomethane	59	33	1,200	580	1,900	860	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
Carbon Disulfide	2,200	1,200	46,000	22,000	70,000	33,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
Carbon Tetrachloride	14	7.2	440	190	650	290	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
CFC-11	300	160	6,000	2,700	9,000	4,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
CFC-12	71	38	1,400	640	2,100	960	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
Chlorobenzene	1,300	720	27,000	12,000	41,000	18,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Chlorobromomethane	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Chlorodibromomethane	58	29	4,400	1,800	6,600	2,800	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
Chloroethane	15,000	8,600	320,000	150,000	490,000	230,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
Chloroform	19	10	610	270	910	410	ug/L	< 1 U	1	1	1	1	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Chloromethane	340	200	7,400	3,500	11,000	5,300	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
cis-1,2-Dichloroethene	110	62	2,300	1,100	3,500	1,600	ug/L	2	5	2	1	1	28	22 [21]	19	22 [21]
cis-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Dibromomethane	450	230	9,000	3,900	13,000	5,900	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
Dichloromethane	9,100	5,000	190,000	88,000	280,000	130,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
Ethyl ether	44,000	24,000	900,000	410,000	1,400,000	620,000	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U [<lt; 10="" td="" u]<=""><td>< 10 U</td><td>< 10 U [<lt; 10="" td="" u]<=""></lt;></td></lt;>	< 10 U	< 10 U [<lt; 10="" td="" u]<=""></lt;>
Ethylbenzene	110	60	3,600	1,600	5,400	2,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Hexachloroethane	130	64	3,900	1,600	5,900	2,500	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
Iodomethane	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Isopropyl benzene	26	13	810	360	1,200	540	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
m&p-Xylene	--	--	--	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U [<lt; 2="" td="" u]<=""><td>< 2 U</td><td>< 2 U [<lt; 2="" td="" u]<=""></lt;></td></lt;>	< 2 U	< 2 U [<lt; 2="" td="" u]<=""></lt;>
Methyl tert-butyl ether	10,000	5,300	320,000	150,000	490,000	220,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
Naphthalene	190	100	6,200	2,700	9,300	4,100	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [<lt; 5="" td="" u]<=""><td>< 5 U</td><td>< 5 U [<lt; 5="" td="" u]<=""></lt;></td></lt;>	< 5 U	< 5 U [<lt; 5="" td="" u]<=""></lt;>
N-Butylbenzene	2,000	1,100	12,000	12,000	12,000	12,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
N-Propylbenzene	10,000	5,400	52,000	31,000	52,000	46,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
o-Xylene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Styrene	1,400	740	45,000	20,000	67,000	30,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
tert-Butylbenzene	3.4	1.8	67	29	100	44	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Tetrachloroethene	250	130	3,400	1,500	5,000	2,200	ug/L	84	< 1 U	< 1 U	< 1 U	< 1 U	17	11 [12]	16	14 [15]
Tetrahydrofuran	1,300,000	690,000	27,000,000	12,000,000	41,000,000	19,000,000	ug/L	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U [<lt; 90="" td="" u]<=""><td>< 90 U</td><td>< 90 U [<lt; 90="" td="" u]<=""></lt;></td></lt;>	< 90 U	< 90 U [<lt; 90="" td="" u]<=""></lt;>
Toluene	56,000	30,000	530,000	250,000	530,000	380,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Total Xylenes	3,000	1,600	60,000	27,000	91,000	41,000	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U [<lt; 2="" td="" u]<=""><td>< 2 U</td><td>< 2 U [<lt; 2="" td="" u]<=""></lt;></td></lt;>	< 2 U	< 2 U [<lt; 2="" td="" u]<=""></lt;>
trans-1,2-Dichloroethene	480	260	9,800	4,500	15,000	6,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	2	2 [2]	1	2 [2]
trans-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
trans-1,4-Dichloro-2-butene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [<lt; 1="" td="" u]<=""><td>< 1 U</td><td>< 1 U [<lt; 1="" td="" u]<=""></lt;></td></lt;>	< 1 U	< 1 U [<lt; 1="" td="" u]<=""></lt;>
Trichloroethene	15	8.1	210	93	310	140	ug/L	4	< 1 U	< 1 U	<					

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RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	NR Fiero SSVIAC <50k BASE	NR Fiero SSVIAC >50k SOG	NR Fiero SSVIAC >50k BASE	Units	MWOS-10 3/7/2023 MWOS-10_GW-030723	MWOS-10 6/12/2023 MWOS-10_GW-061223	MWOS-10 8/28/2023 MWOS-10_GW-082823	MWOS-10 11/30/2023 MWOS-10_GW-113023	TW-12-22 6/8/2023 TW-12-22_GW-060823	TW-12-22 11/30/2023 TW-12-22_GW-113023	UNKNOWN-1 6/7/2023 UNKNOWN-01_GW-060723	Unknown-1 12/4/2023 UNKNOWN-01_GW-120423
Volatile Organics															
1,1,1,2-Tetrachloroethane	180	93	5,700	2,400	8,500	3,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	22,000	11,000	210,000	92,000	310,000	140,000	ug/L	4	4	3	3	11	17	47	66
1,1,2,2-Tetrachloroethane	130	66	4,100	1,800	6,200	2,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-Trichloroethane	21	11	410	180	620	280	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	160	88	5,300	2,400	8,000	3,600	ug/L	7	5	5	5	7	10	5	8
1,1-Dichloroethene	410	220	8,300	3,800	13,000	5,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trichlorobenzene	4,100	2,100	18,000	18,000	18,000	18,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,3-Trichloropropane	91	47	1,800	790	2,700	1,200	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trimethylbenzene	2,000	1,100	41,000	18,000	61,000	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	270	130	5,100	2,200	7,700	3,300	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2,4-Trimethylbenzene	1,100	590	22,000	9,900	34,000	15,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	0.029	0.061	0.042	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	110	370	160	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	19,000	9,900	160,000	160,000	160,000	160,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane	50	27	1,600	750	2,500	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloropropane	100	56	2,100	950	3,200	1,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3,5-Trimethylbenzene	800	420	16,000	7,000	24,000	10,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	130	70	2,700	1,200	4,000	1,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	310	160	9,800	4,300	15,000	6,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2-Butanone	4,000,000	2,200,000	59,000,000	27,000,000	88,000,000	40,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
2-Hexanone	24,000	12,000	490,000	220,000	740,000	320,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
2-Methylnaphthalene	3,500	1,800	25,000	25,000	25,000	25,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	9,500,000	19,000,000	14,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Acetone	32,000,000	18,000,000	240,000,000	110,000,000	360,000,000	160,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Acrylonitrile	120	67	4,100	1,900	6,200	2,900	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Benzene	34	18	1,100	510	1,700	760	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromobenzene	3,300	1,700	66,000	29,000	99,000	43,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	760	2,600	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	6,400	3,200	200,000	83,000	300,000	120,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	59	33	1,200	580	1,900	860	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Disulfide	2,200	1,200	46,000	22,000	70,000	33,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	190	650	290	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	2	1	< 1 U	< 1 U
CFC-11	300	160	6,000	2,700	9,000	4,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	71	38	1,400	640	2,100	960	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	12,000	41,000	18,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorobromomethane	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	1,800	6,600	2,800	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15,000	8,600	320,000	150,000	490,000	230,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	19	10	610	270	910	410	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	10	8	< 1 U	< 1 U
Chloromethane	340	200	7,400	3,500	11,000	5,300	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
cis-1,2-Dichloroethene	110	62	2,300	1,100	3,500	1,600	ug/L	9	7	8	8	48	33	< 1 U	< 1 U
cis-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Dibromomethane	450	230	9,000	3,900	13,000	5,900	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Dichloromethane	9,100	5,000	190,000	88,000	280,000	130,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Ethyl ether	44,000	24,000	900,000	410,000	1,400,000	620,000	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Ethylbenzene	110	60	3,600	1,600	5,400	2,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Hexachloroethane	130	64	3,900	1,600	5,900	2,500	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Iodomethane	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropyl benzene	26	13	810	360	1,200	540	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
m&p-Xylene	--	--	--	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Methyl tert-butyl ether	10,000	5,300	320,000	150,000	490,000	220,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Naphthalene	190	100	6,200	2,700	9,300	4,100	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
N-Butylbenzene	2,000	1,100	12,000	12,000	12,000	12,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
N-Propylbenzene	10,000	5,400	52,000	31,000	52,000	46,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
o-Xylene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Styrene	1,400	740	45,000	20,000	67,000	30,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
tert-Butylbenzene	3.4	1.8	67	29	100	44	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	1,500	5,000	2,200	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	4	< 1 U	29	45
Tetrahydrofuran	1,300,000	690,000	27,000,000	12,000,000	41,000,000	19,000,000	ug/L	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U	< 90 U
Toluene	56,000	30,000	530,000	250,000	530,000	380,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes	3,000	1,600	60,000	27,000	91,000	41,000	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
trans-1,2-Dichloroethene	480	260	9,800	4,500	15,000	6,700	ug/L	1	1	1	1	2	2	< 1 U	< 1 U
trans-1,3-Dichloropropene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,4-Dichloro-2-butene	--	--	--	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	15	8.1	210	93	310	140	ug/L	11	12	10	9	13	3	< 1 U	< 1 U
Vinyl Chloride	2.2	1.2	260	120	390	180	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U

Table 2
Summary of 2023 Groundwater Analytical Results
2023 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan

Notes:

- 1) Criteria listed are from the EGLE Former Fiero Assembly Site-Specific Criteria Evaluation dated April 21, 2020.
- 2) Values in bold italics denotes exceedance and/or equal to Residential Site-Specific Volatilization to Indoor Air Criteria.
- 3) Values in red type denotes exceedance and/or equal to Non-Residential Site-Specific Volatilization to Indoor Air Criteria.
- 4) Duplicate analyses are presented in brackets.
- 5) Samples were analyzed by EPA Method SW5030C/8260C

Abbreviations:

µg/L	Micrograms per liter
BASE	Basement scenario
E	Concentration exceeds calibration range
NA	Not analyzed
NR	Non-Residential
Res	Residential
SOG	Slab-On-Grade scenario
SSVIAC	Site-Specific Volatilization to Indoor Air Criteria
U	Compound was analyzed for but not detected. The associated value is the compound quantitation limit.
Y	Elevated reporting limit due to high target concentration.
<50k	Less than 50,000 square feet
>50k	Greater than 50,000 square feet

Table 3
Summary of 2023 Soil Gas Analytical Results
RACER Trust Pontiac North Campus
Former Fiero Properties
Pontiac, Michigan



Location ID: Sample Depth (ft. bgs): Date Collected:	Fiero SSVIAC Soil Gas Residential SOG Criteria	Fiero SSVIAC Soil Gas Residential Basement Criteria		SV-01-21 14-14.5 3/20/2023	SV-01-21 14-14.5 6/5/2023	SV-01-21 14-14.5 8/28/2023	SV-01-21 14-14.5 11/27/2023	SV-02-21 23.25-23.75 3/20/2023	SV-02-21 23.25-23.75 6/5/2023	SV-02-21 23.25-23.75 8/28/2023	SV-02-21 23.25-23.75 11/27/2023	SV-03-21 11.5-12 3/20/2023	SV-03-21 11.5-12 6/6/2023	SV-03-21 11.5-12 8/28/2023	SV-03-21 11.5-12 11/27/2023	SV-04-21 22.5-23 3/22/2022	SV-04-21 22.5-23 6/8/2022	SV-04-21 22.5-23 9/22/2022	SV-04-21 22.5-23 11/28/2022	SV-04-21 22.5-23 3/20/2023	SV-04-21 22.5-23 6/6/2023
Analyte																					
1,1-Dichloroethene	7,000	7,000	ug/m ³	< 4.0 U	< 3.9 U	< 4.3 U	< 4.0 U	< 4.0 U (<4.0 U)	< 4.2 U (< 4.3 U)	< 4.3 U (< 4.1 U)	< 3.9 U (< 3.8 U)	< 4.1 U	< 4.1 U	< 4.1 U	< 3.9 U	< 3.8 U	< 4.5 U	< 4.2 U	< 32 U	< 4.1 U	< 4.4 U
cis-1,2-Dichloroethene	280	280	ug/m ³	< 4.0 U	< 3.9 U	< 4.3 U	< 4.0 U	< 4.0 U (<4.0 U)	< 4.2 U (< 4.3 U)	< 4.3 U (< 4.1 U)	< 3.9 U (< 3.8 U)	< 4.1 U	< 4.1 U	< 4.1 U	< 3.9 U	< 3.8 U	< 4.5 U	< 4.2 U	< 32 U	< 4.1 U	< 4.4 U
trans-1,2-Dichloroethene	2,800	2,800	ug/m ³	< 4.0 U	< 3.9 U	< 4.3 U	< 4.0 U	< 4.0 U (<4.0 U)	< 4.2 U (< 4.3 U)	< 4.3 U (< 4.1 U)	< 3.9 U (< 3.8 U)	< 4.1 U	< 4.1 U	< 4.1 U	< 3.9 U	< 3.8 U	< 4.5 U	< 4.2 U	< 32 U	< 4.1 U	< 4.4 U
Tetrachloroethene	1,400	1,400	ug/m ³	< 6.8 U	7.5	17	9.7	7.6 (8.4)	8.8 (8.1)	12 (12)	8.3 (8.1)	< 7.0 U	< 7.0 U	< 7.0 U	< 6.6 U	< 6.6 U	< 7.6 U	< 7.2 U	< 56 U	< 7.0 U	< 7.5 U
Trichloroethene	67	67	ug/m ³	8	9.3	32	16	61.0 (68.0)	50.0 (54.0)	60 (60)	50 (51)	< 5.6 U	< 5.6 U	< 5.5 U	< 5.3 U	11	12	14	< 44 U	18	17
Vinyl Chloride	54	54	ug/m ³	< 2.6 U	< 2.5 U	< 2.8 U	< 2.6 U	< 2.6 U (<2.6 U)	< 2.7 U (< 2.8 U)	< 2.7 U (< 2.6 U)	< 2.5 U (< 2.5 U)	< 2.6 U	< 2.6 U	< 2.6 U	< 2.5 U	< 2.5 U	< 2.9 U	< 2.7 U	< 21 U	< 2.6 U	< 2.8 U

Table 3
Summary of 2023 Soil Gas Analytical Results
RACER Trust Pontiac North Campus
Former Fiero Properties
Pontiac, Michigan



Location ID: Sample Depth (ft. bgs): Date Collected:	Fiero SSVIAC Soil Gas Residential SOG Criteria	Fiero SSVIAC Soil Gas Residential Basement Criteria		SV-04-21 22.5-23 8/28/2023	SV-04-21 22.5-23 11/27/2023	SV-05-21 11.5-12 3/22/2022	SV-05-21 11.5-12 6/8/2022	SV-05-21 11.5-12 9/22/2022	SV-05-21 11.5-12 11/28/2022	SV-05-21 11.5-12 3/20/2023	SV-05-21 11.5-12 6/5/2023	SV-05-21 11.5-12 8/28/2023	SV-05-21 11.5-12 11/27/2023	SV-06-21 22.5-23 3/22/2022	SV-06-21 22.5-23 6/8/2022	SV-06-21 22.5-23 9/22/2022	SV-06-21 22.5-23 11/28/2022	SV-06-21 22.5-23 3/20/2023	SV-06-21 22.5-23 6/5/2023	SV-06-21 22.5-23 8/28/2023	SV-06-21 22.5-23 11/27/2023	
Analyte																						
1,1-Dichloroethene	7,000	7,000	ug/m ³	< 4.0 U	< 3.9 U	< 4.1 U	< 4.2 U	< 4.4 U	< 32 U	< 4.1 U	< 4.4 U	< 4.1 U	< 3.9 U	< 4.0 U	< 4.3 U	< 3.9 U	< 32 U	< 4.2 U	< 4.2 U	< 4.2 U	< 3.9 U	
cis-1,2-Dichloroethene	280	280	ug/m ³	< 4.0 U	< 3.9 U	< 4.1 U	< 4.2 U	< 4.4 U	< 32 U	< 4.1 U	< 4.4 U	< 4.1 U	< 3.9 U	< 4.0 U	< 4.3 U	< 3.9 U	< 32 U	< 4.2 U	< 4.2 U	< 4.2 U	< 3.9 U	
trans-1,2-Dichloroethene	2,800	2,800	ug/m ³	< 4.0 U	< 3.9 U	< 4.1 U	< 4.2 U	< 4.4 U	< 32 U	< 4.1 U	< 4.4 U	< 4.1 U	< 3.9 U	< 4.0 U	< 4.3 U	< 3.9 U	< 32 U	< 4.2 U	< 4.2 U	< 4.2 U	< 3.9 U	
Tetrachloroethene	1,400	1,400	ug/m ³	< 6.8 U	< 6.7 U	< 7.0 U	< 7.1 U	< 7.5 U	< 55 U	< 7.0 U	< 7.5 U	< 7.0 U	< 6.6 U	< 6.8 U	< 7.4 U	< 6.7 U	< 55 U	< 7.2 U	< 7.2 U	< 7.2 U	< 6.6 U	
Trichloroethene	67	67	ug/m ³	16	16	< 5.5 U	< 5.6 U	< 5.9 U	< 43 U	< 5.5 U	< 5.9 U	< 5.5 U	< 5.2 U	13	14	16	< 43 U	48	15	17	17	
Vinyl Chloride	54	54	ug/m ³	< 2.6 U	< 2.5 U	< 2.6 U	< 2.7 U	< 2.8 U	< 20 U	< 2.6 U	< 2.8 U	< 2.6 U	< 2.5 U	< 2.6 U	< 2.8 U	< 2.5 U	< 20 U	< 2.7 U	< 2.7 U	< 2.7 U	< 2.5 U	

NOTES:

1) Criteria listed are from the EGLE Former Fiero Assembly Site-Specific Criteria Evaluation dated April 21, 2020.

2) Values in bold denote exceedance and/or equal to Residential Site-Specific Volatilization to Indoor Air soil gas SOG criteria.

3) Values in red type denote exceedance and/or equal to Residential Site-Specific Volatilization to Indoor Air soil gas basement criteria.

4) Duplicate analyses are presented in parenthesis next to parent sample.

5) Samples analyzed by USEPA TO-15 Methods

Abbreviations:

µg/m³ - Micrograms per cubic meter.

< - Not detected

ft. bgs - feet below ground surface

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value.

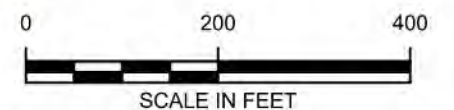
SOG - Slab-On-Grade

SSVIAC - Site-Specific Volatilization to Indoor Air Criteria

Figures



	EXISTING MONITORING WELL
	SOIL VAPOR MONITORING POINT
	SEMI-ANNUAL GAUGING ONLY
	SEMI-ANNUAL GW SAMPLING
	QUARTERLY GW SAMPLING
	NOT MONITORED
	CURRENT OR FORMER RACER PROPERTY

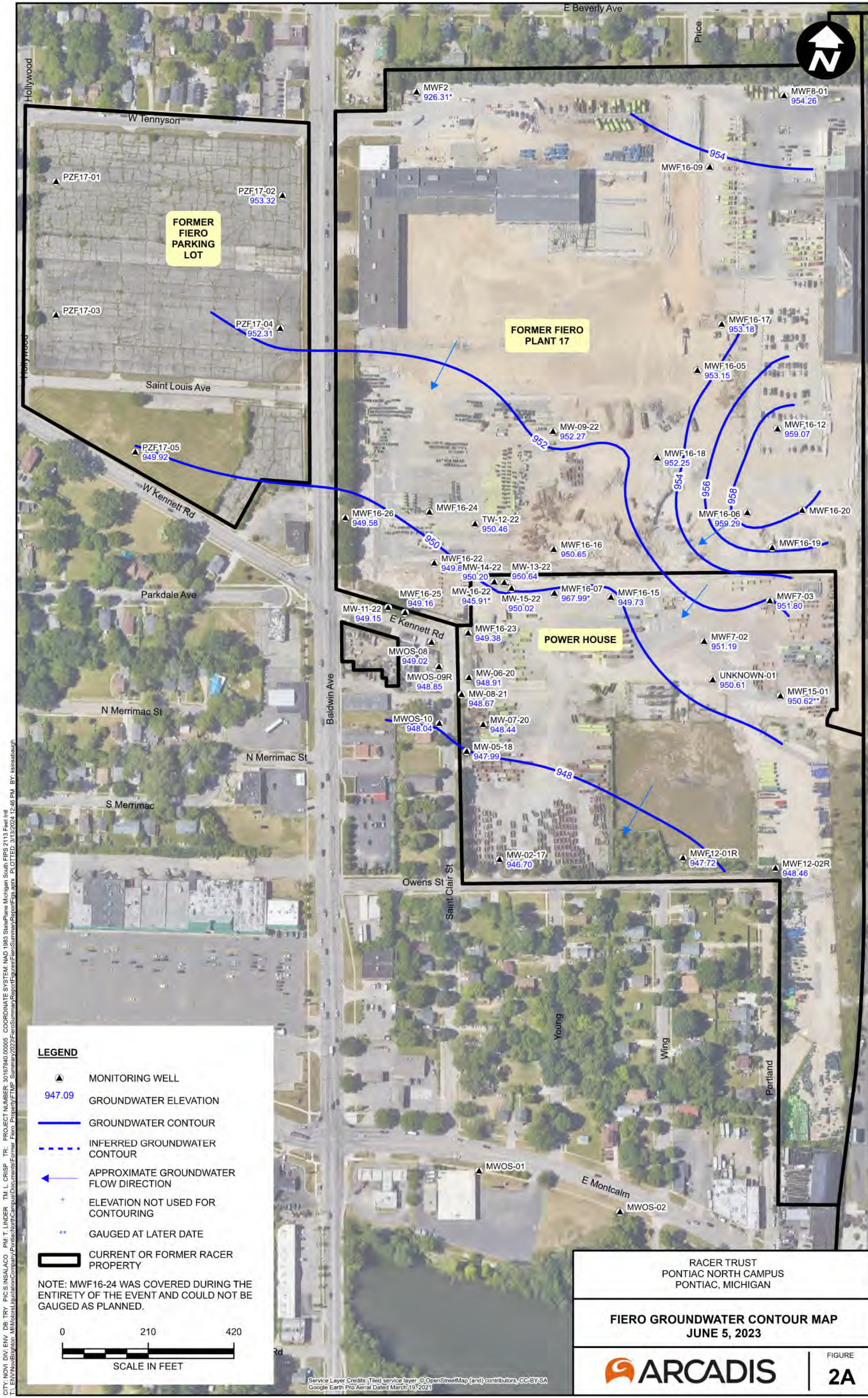


RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

2023 FIERO TEMPORARY MONITORING PLAN LOCATIONS



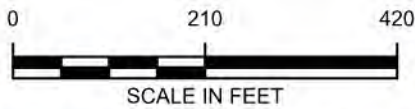
FIGURE 1



LEGEND

- ▲ MONITORING WELL
- 947.09 GROUNDWATER ELEVATION
- GROUNDWATER CONTOUR
- - - INFERRED GROUNDWATER CONTOUR
- ← APPROXIMATE GROUNDWATER FLOW DIRECTION
- * ELEVATION NOT USED FOR CONTOURING
- ** GAUGED AT LATER DATE
- ▭ CURRENT OR FORMER RACER PROPERTY

NOTE: MWF16-24 WAS COVERED DURING THE ENTIRETY OF THE EVENT AND COULD NOT BE GAUGED AS PLANNED.



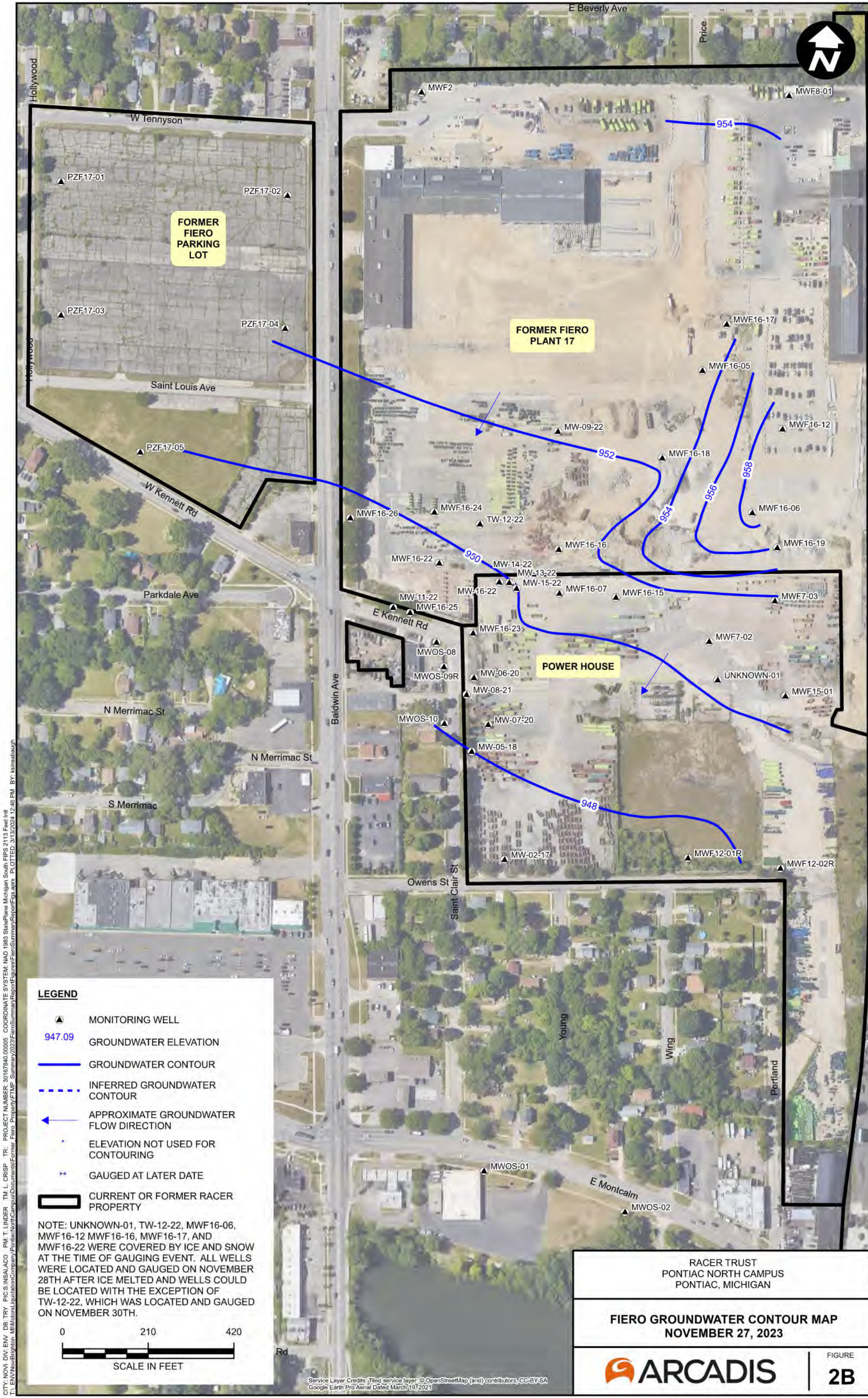
SCALE IN FEET

RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

**FIERO GROUNDWATER CONTOUR MAP
JUNE 5, 2023**



FIGURE
2A

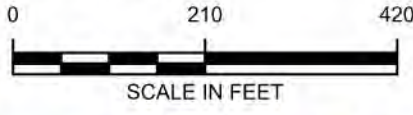


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T: ENVNewBrighton, MIMotorsLiquidationCompany, PontiacNorthCampusDocumentsFormer, Fiero Property/FTMP Summary2023FieroSummaryReportFiguresFieroSummaryReportFigs.aprx PLOTTED: 3/13/2024 12:46 PM BY: ksmabaugh

LEGEND

- ▲ MONITORING WELL
- 947.09 GROUNDWATER ELEVATION
- GROUNDWATER CONTOUR
- - - INFERRED GROUNDWATER CONTOUR
- ← APPROXIMATE GROUNDWATER FLOW DIRECTION
- * ELEVATION NOT USED FOR CONTOURING
- ** GAUGED AT LATER DATE
- ▭ CURRENT OR FORMER RACER PROPERTY

NOTE: UNKNOWN-01, TW-12-22, MWF16-06, MWF16-12 MWF16-16, MWF16-17, AND MWF16-22 WERE COVERED BY ICE AND SNOW AT THE TIME OF GAUGING EVENT. ALL WELLS WERE LOCATED AND GAUGED ON NOVEMBER 28TH AFTER ICE MELTED AND WELLS COULD BE LOCATED WITH THE EXCEPTION OF TW-12-22, WHICH WAS LOCATED AND GAUGED ON NOVEMBER 30TH.



Service Layer Credits: Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA
Google Earth Pro Aerial Dated March 19, 2021

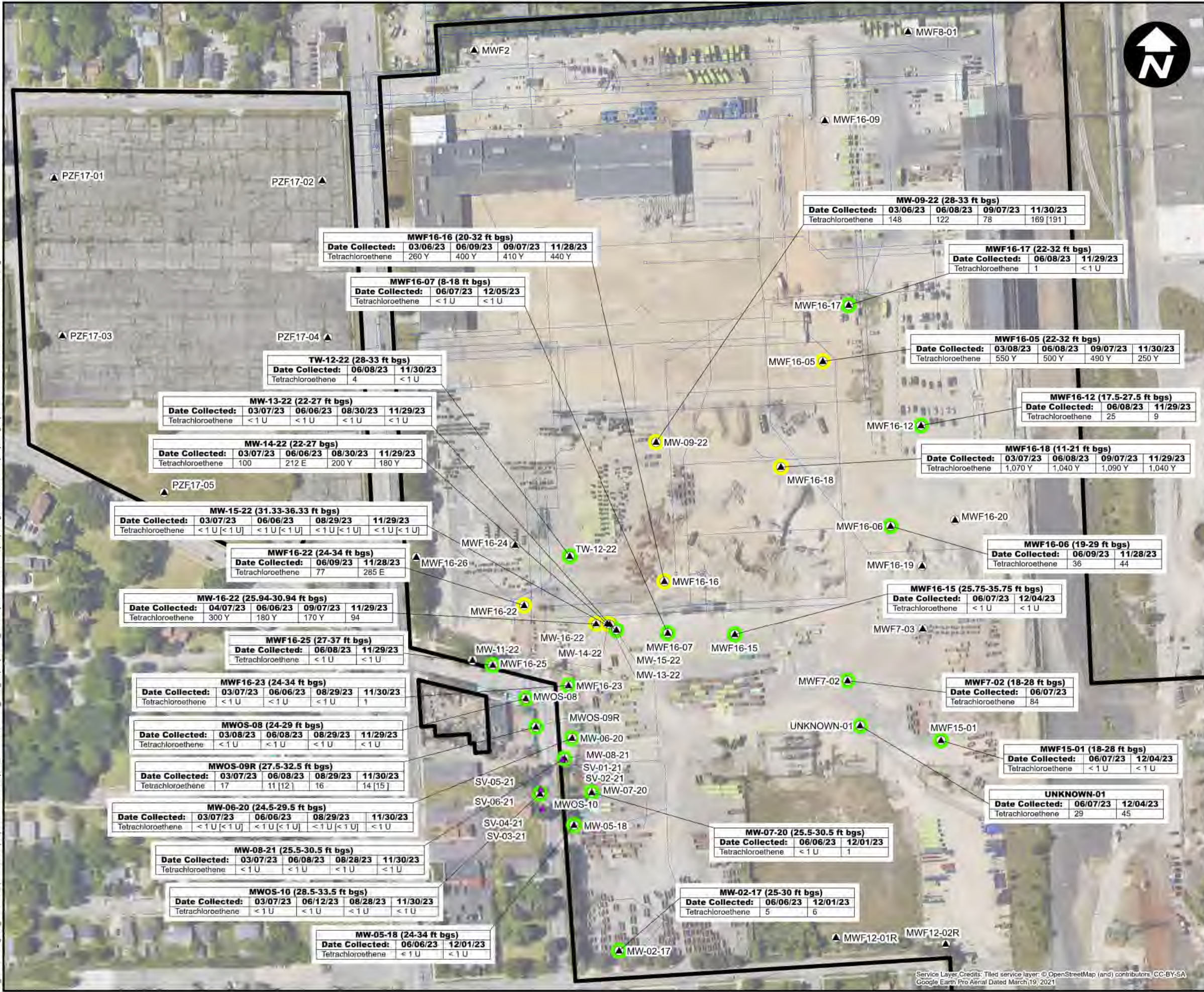
RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

FIERO GROUNDWATER CONTOUR MAP
NOVEMBER 27, 2023

ARCADIS

FIGURE
2B

CITY: NOV1 DIV: ENV DB: TRY PIC: INSALACO PM: T. LINDER TR: PROJECT NUMBER: 30075936.0005 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T: ENV/Nov/Eng/Tr_Mil/Motorist/Utilization/Company/Pontiac/North Campus Documents/Former Fiero_Property/FTMP_Summary/2023 FieroSummaryReport/Figures/FieroSummaryReportFigs.aprx PLOTTED: 3/19/2024 1:15 PM BY: kainsabaugh



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Google Earth Pro Aerial Dated March 19, 2021

CITY: NOVI; DIV: ENV; DB: TR; PICS: INSALACO; PM: T. LINDER; TM: L. CRISP; TR: PROJECT NUMBER: 30075936.0005; COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Int'l; T: ENV\Novi\Brighton; M:\Motor\Liquidation\Company\Pontiac\North Campus\Documents\Former_Fiero_Property\FTMP_Summary\2023\FieroSummaryReport\Figures\FieroSummaryReportFigs.aprx; PLOTTED: 3/14/2024 9:51 AM; BY: ksinsabaugh



LEGEND

- ▲ EXISTING MONITORING WELL
- ▲ SOIL VAPOR MONITORING POINT
- EXISTING UTILITY
- ▭ CURRENT OR FORMER RACER PROPERTY

CONCENTRATION OF TCE IN GROUNDWATER

- < 8.1 µg/L
- 8.1 - 210 µg/L
- > 210 µg/L

Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG
15	8.1	210

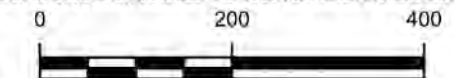
TCE	TRICHLOROETHENE
BASE	BASEMENT SCENARIO
ft bgs	FEET BELOW GROUND SURFACE
NR	NON-RESIDENTIAL
Res	RESIDENTIAL
SOG	SLAB-ON-GRADE SCENARIO
SSVIAC	SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA
U	COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT.
Y	ELEVATED REPORTING LIMIT DUE TO HIGH TARGET CONCENTRATION.
<50k	LESS THAN 50,000 SQUARE FEET
<	NOT DETECTED ABOVE THE LABORATORY REPORTING LIMIT

ALL GROUNDWATER CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (µg/L)

DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.

CRITERIA LISTED ARE FROM THE EGLE FORMER FIERO ASSEMBLY SITE-SPECIFIC CRITERIA EVALUATION DATED APRIL 21, 2020.

ON-SITE MONITORING WELL LOCATIONS COMPARED TO THE NONRESIDENTIAL SSVIAC. MONITORING WELL LOCATIONS WITHIN 100-FEET OF THE PROPERTY BOUNDARY AND OFF-SITE MONITORING WELLS LOCATIONS COMPARED TO THE RESIDENTIAL SSVIAC.



SCALE IN FEET

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PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

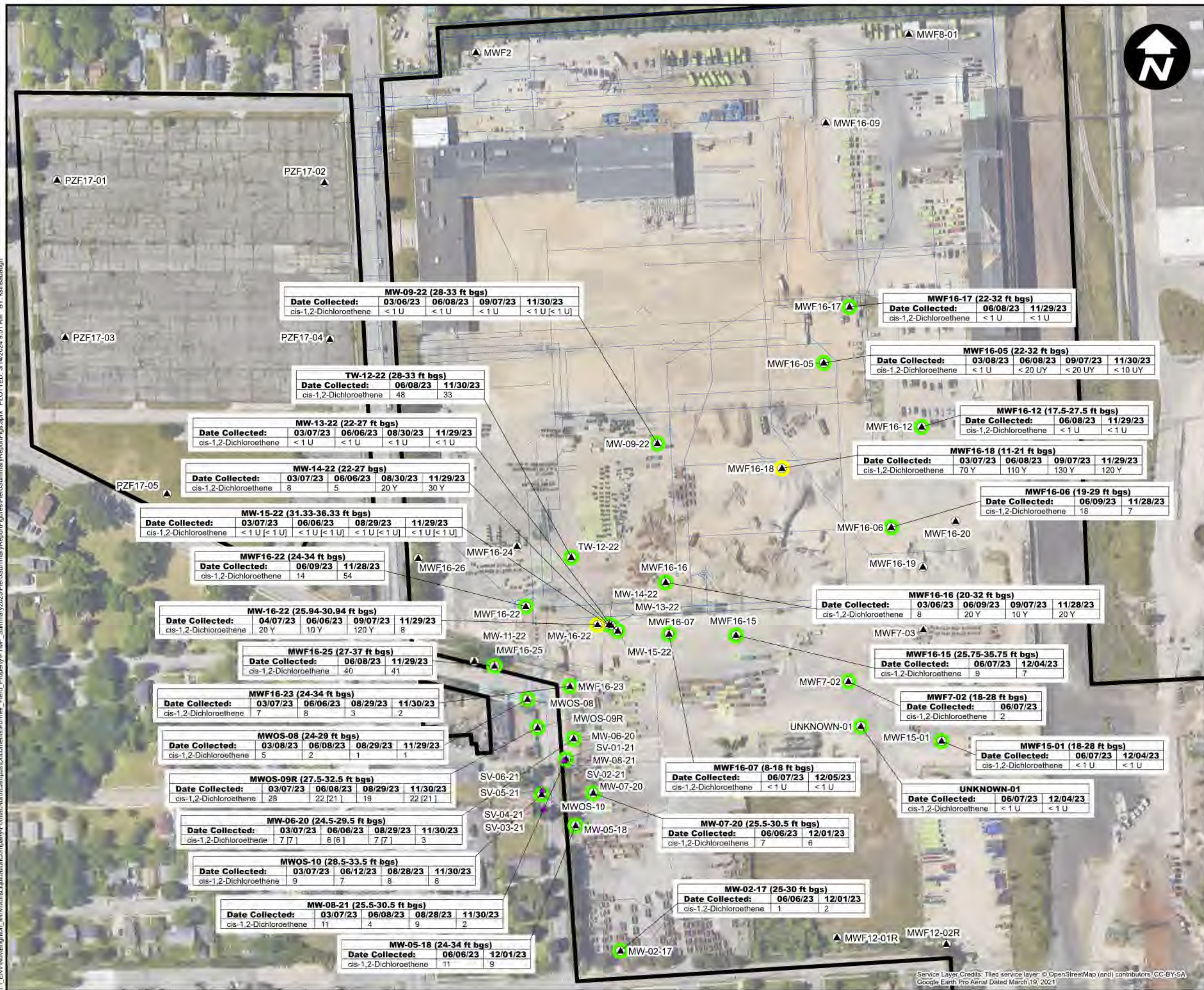
CONCENTRATION OF TRICHLOROETHENE IN GROUNDWATER - 2023



FIGURE

4

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LEGEND

-  EXISTING MONITORING WELL
-  SOIL VAPOR MONITORING POINT
-  EXISTING UTILITY
-  CURRENT OR FORMER RACER PROPERTY

CONCENTRATION OF DCE IN GROUNDWATER

-  < 62 µg/L
-  62 - 2,300 µg/L
-  > 2,300 µg/L

Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG
110	62	2,300

DCE cis-1,2-DICHLOROETHENE

BASE BASEMENT SCENARIO

ft bgs FEET BELOW GROUND SURFACE

NR NON-RESIDENTIAL

Res RESIDENTIAL

SOG SLAB-ON-GRADE SCENARIO

SSVIAC SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA

U COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT.

Y ELEVATED REPORTING LIMIT DUE TO HIGH TARGET CONCENTRATION.

<50k LESS THAN 50,000 SQUARE FEET

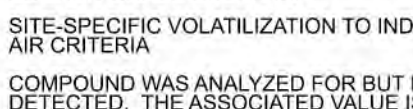
< NOT DETECTED ABOVE THE LABORATORY REPORTING LIMIT

ALL GROUNDWATER CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (µg/L)

DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.

CRITERIA LISTED ARE FROM THE EGLE FORMER FIERO ASSEMBLY SITE-SPECIFIC CRITERIA EVALUATION DATED APRIL 21, 2020.

ON-SITE MONITORING WELL LOCATIONS COMPARED TO THE NONRESIDENTIAL SSVIAC. MONITORING WELL LOCATIONS WITHIN 100-FEET OF THE PROPERTY BOUNDARY AND OFF-SITE MONITORING WELLS LOCATIONS COMPARED TO THE RESIDENTIAL SSVIAC.



0 200 400

SCALE IN FEET

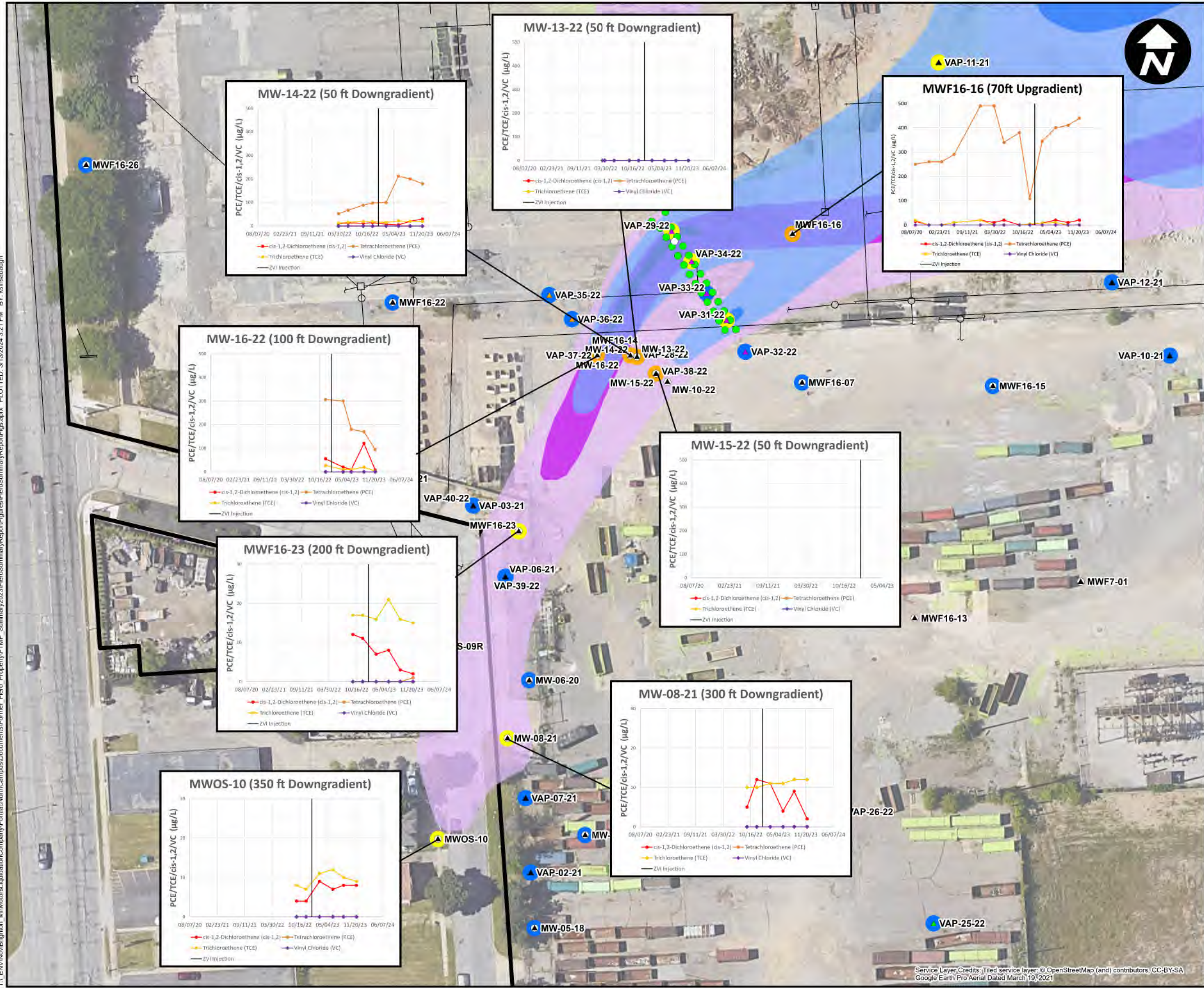
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PONTIAC, MICHIGAN

CONCENTRATION OF CIS-1,2-DICHLOROETHENE IN GROUNDWATER - 2023



ARCADIS

FIGURE
5



LEGEND

- ZVI PILOT INJECTION POINT
- CONFIRMATORY SOIL BORINGS
- SOIL BORING
- MONITORING WELL
- VERTICAL AQUIFER PROFILE (VAP, ARCADIS OCTOBER 2021)
- VERTICAL AQUIFER PROFILE (VAP, ARCADIS FEBRUARY 2022)
- VERTICAL AQUIFER PROFILE (VAP, ARCADIS JUNE 2022)
- VERTICAL AQUIFER PROFILE (VAP, ARCADIS SEPTEMBER 2022)
- PERFORMANCE MONITORING WELL
- EXCEEDS RESIDENTIAL FIERO SSVIAC BASEMENT (TCE >8.1 µg/L, PCE >130 µg/L)
- DOES NOT EXCEED RESIDENTIAL FIERO SSVIAC BASEMENT (TCE <8.1 µg/L, PCE <130 µg/L)
- UNABLE TO COLLECT VAP SAMPLE
- PROPOSED OR EXISTING BUILDING
- PROPOSED OR EXISTING UTILITY
- CURRENT OR FORMER RACER PROPERTY

CONCENTRATION OF TETRACHLOROETHENE IN SOIL

- 1,000 - 5,000 µg/kg
- 5,000 - 10,000 µg/kg
- 10,000 µg/kg

CONCENTRATION OF TETRACHLOROETHENE IN GROUNDWATER

- 130 - 500 µg/L
- >500 µg/L

CONCENTRATION OF TRICHLOROETHENE IN GROUNDWATER

- 8.1 - 20 µg/L
- 20 - 35 µg/L
- >35 µg/L

NOTES:

- ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (µg/L) AND MICROGRAMS PER KILOGRAM (µg/kg).
- GROUNDWATER RESULTS ARE FROM THIRD QUARTER 2022.
- SSVIAC - SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA.
- CRITERIA FROM DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY (EGLE) DEVELOPED SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA FOR THE FORMER FIERO ASSEMBLY PLANT, APRIL 21, 2020.

0 70 140
SCALE IN FEET

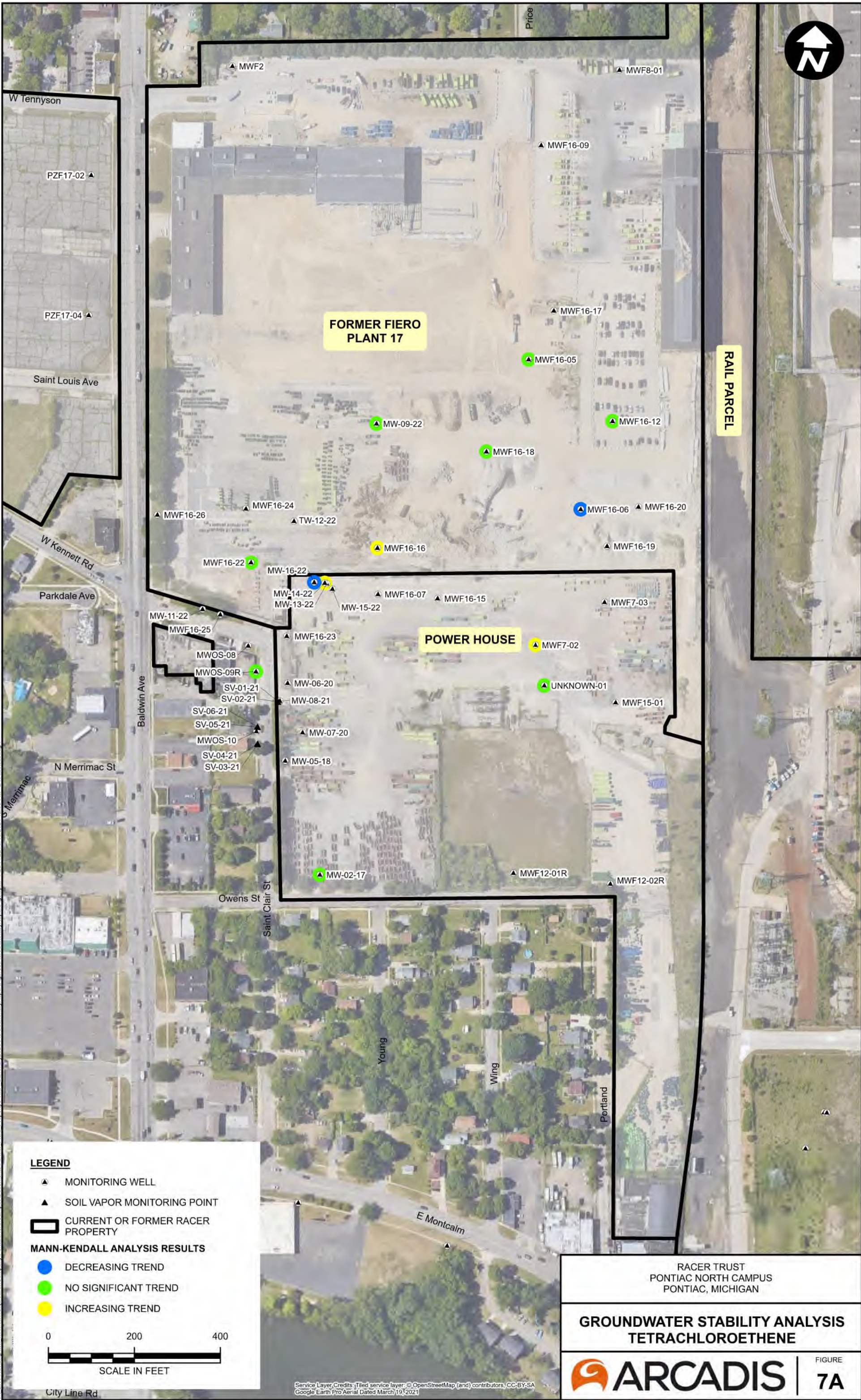
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PONTIAC, MICHIGAN

DISTRIBUTION OF TETRACHLOROETHENE AND TRICHLOROETHENE IN GROUNDWATER, CONCENTRATION OF TETRACHLOROETHENE IN SOIL

ARCADIS

FIGURE
6

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Google Earth Pro Aerial Dated March 19, 2021



FORMER FIERO
PLANT 17

RAIL PARCEL

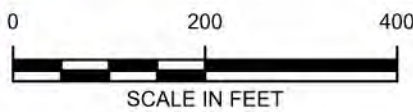
POWER HOUSE

LEGEND

- ▲ MONITORING WELL
- ▲ SOIL VAPOR MONITORING POINT
- ▭ CURRENT OR FORMER RACER PROPERTY

MANN-KENDALL ANALYSIS RESULTS

- DECREASING TREND
- NO SIGNIFICANT TREND
- INCREASING TREND



SCALE IN FEET

RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

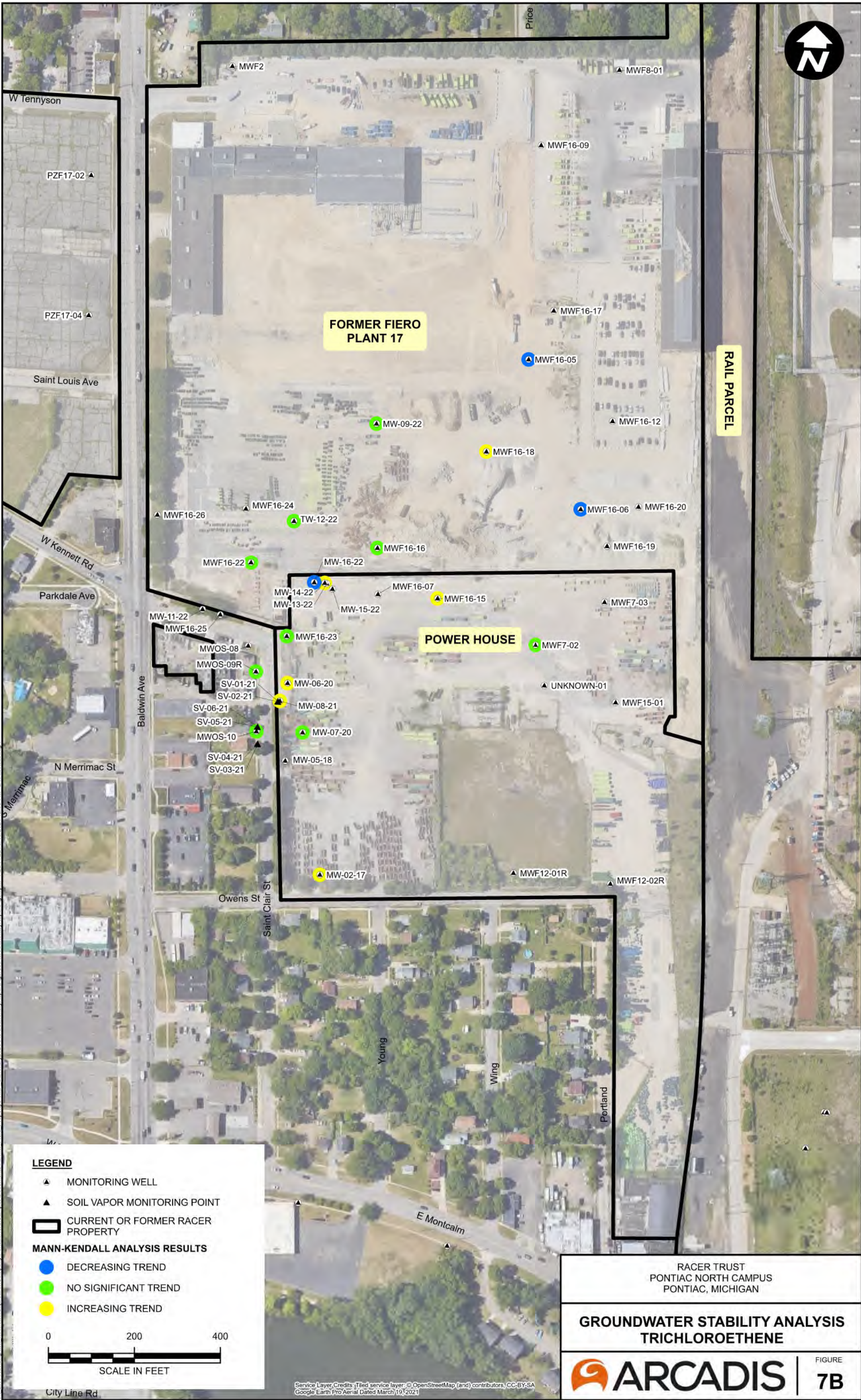
**GROUNDWATER STABILITY ANALYSIS
TETRACHLOROETHENE**



FIGURE
7A

Service Layer Credits: Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA
Google Earth Pro Aerial Dated March 19, 2021

CITY: NOVI, MI DIV: ENV DB: TRY PIC: J. BARRETT PM: T. LINDER TM: L. CRISP TR: PROJECT NUMBER: 30167840 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T: ENVNewBrighton, MIMotorsLiquidationCompany/PontiacNorthCampus/Documents/Fiero_Property/FTMP_Summary/2023/FieroSummaryReportFigures/FieroSummaryReportFigs.aprx PLOTTED: 3/13/2024 12:58 PM BY: ksinaabaugh



LEGEND

- ▲ MONITORING WELL
- ▲ SOIL VAPOR MONITORING POINT
- ▭ CURRENT OR FORMER RACER PROPERTY

MANN-KENDALL ANALYSIS RESULTS

- DECREASING TREND
- NO SIGNIFICANT TREND
- INCREASING TREND



SCALE IN FEET

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Google Earth Pro Aerial Dated March 19, 2021

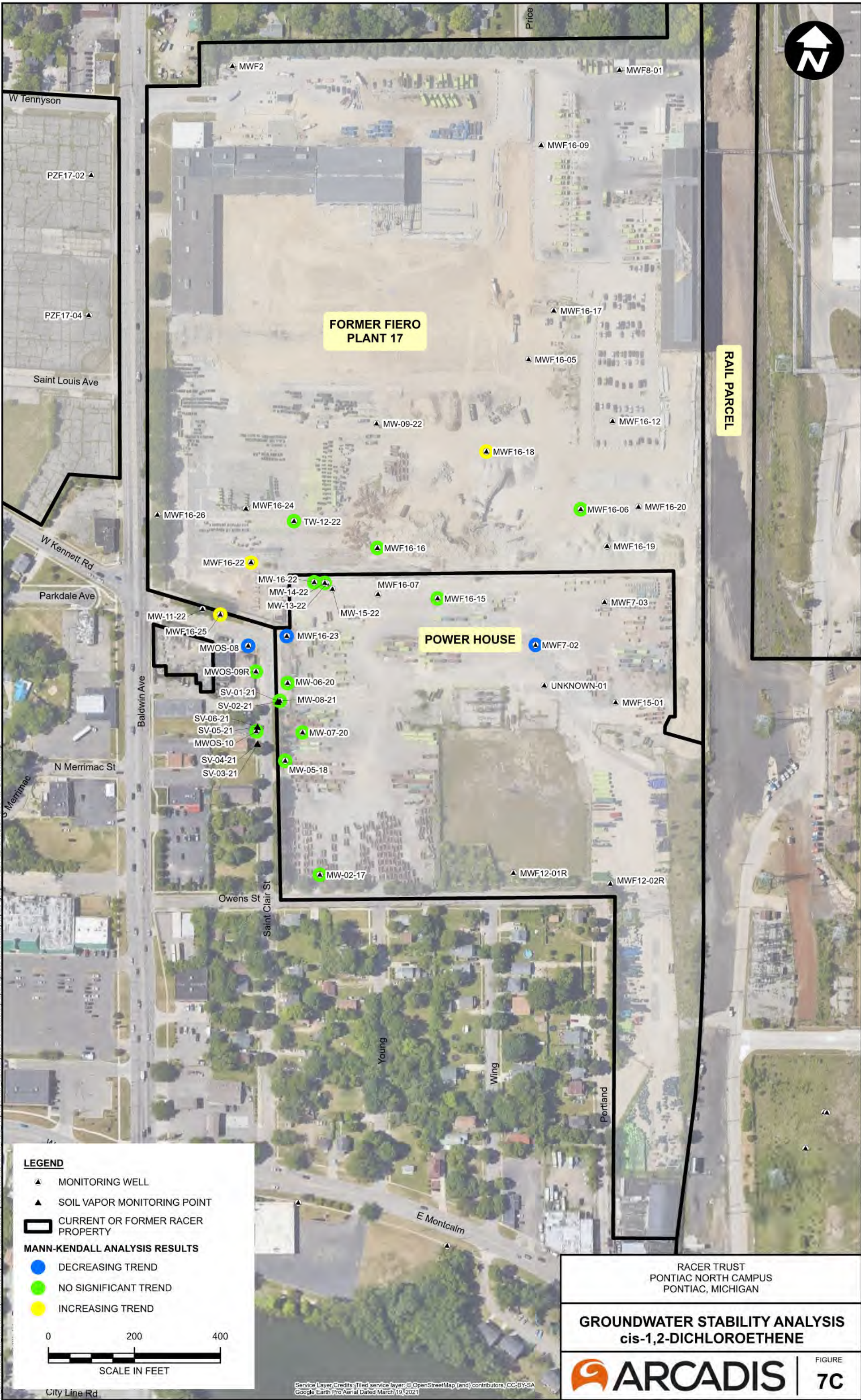
RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

**GROUNDWATER STABILITY ANALYSIS
TRICHLOROETHENE**



FIGURE
7B

CITY: NOVI, MI DIV: ENV DB: TRY PIC: J. BARRETT PM: T. LINDER TM: L. CRISP TR: PROJECT NUMBER: 30167840 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T: ENVNewBrighton, MIMotorsLiquidationCompanyPontiacNorthCampusDocumentsFormer Fiero PropertyFTMP Summary2023FieroSummaryReportFiguresFieroSummaryReportFigs.aprx PLOTTED: 3/13/2024 12:58 PM BY: ksinaabaugh



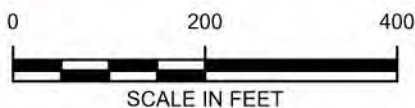
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T: ENV\Nov\Brighton, MI\MotorsLiqudationCompany\PontiacNorthCampus\Documents\Fiero Property\FTP Summary\2023\FieroSummaryReportFigures\FieroSummaryReportFigs.aprx PLOTTED: 3/13/2024 12:59 PM BY: ksinaabaugh

LEGEND

- ▲ MONITORING WELL
- ▲ SOIL VAPOR MONITORING POINT
- ▭ CURRENT OR FORMER RACER PROPERTY

MANN-KENDALL ANALYSIS RESULTS

- DECREASING TREND
- NO SIGNIFICANT TREND
- INCREASING TREND



SCALE IN FEET

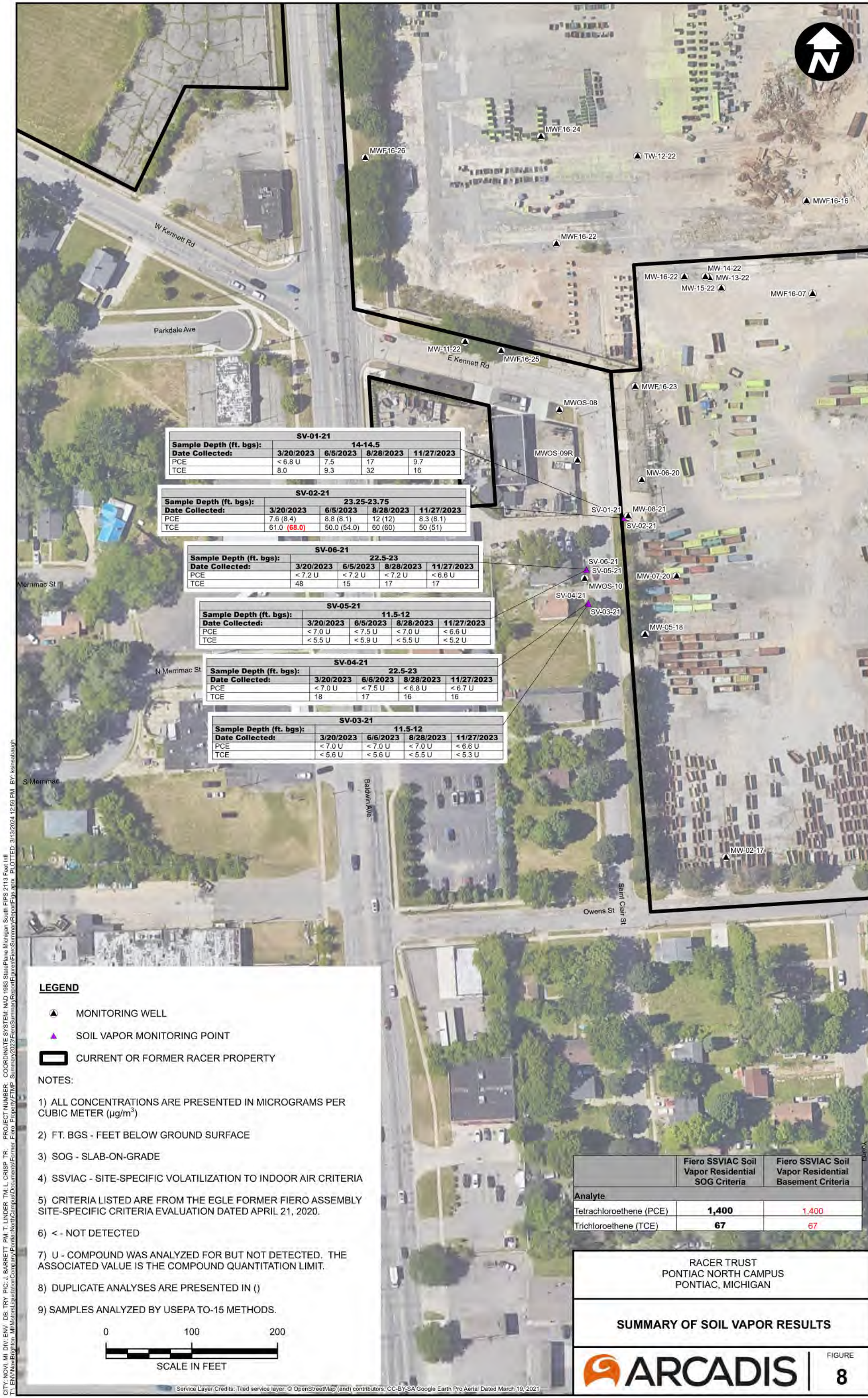
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PONTIAC, MICHIGAN

GROUNDWATER STABILITY ANALYSIS
cis-1,2-DICHLOROETHENE



FIGURE
7C



SV-01-21				
Sample Depth (ft. bgs):	14-14.5			
Date Collected:	3/20/2023	6/5/2023	8/28/2023	11/27/2023
PCE	< 6.8 U	7.5	17	9.7
TCE	8.0	9.3	32	16

SV-02-21				
Sample Depth (ft. bgs):	23.25-23.75			
Date Collected:	3/20/2023	6/5/2023	8/28/2023	11/27/2023
PCE	7.6 (8.4)	8.8 (8.1)	12 (12)	8.3 (8.1)
TCE	61.0 (68.0)	50.0 (54.0)	60 (60)	50 (51)

SV-06-21				
Sample Depth (ft. bgs):	22.5-23			
Date Collected:	3/20/2023	6/5/2023	8/28/2023	11/27/2023
PCE	< 7.2 U	< 7.2 U	< 7.2 U	< 6.6 U
TCE	48	15	17	17

SV-05-21				
Sample Depth (ft. bgs):	11.5-12			
Date Collected:	3/20/2023	6/5/2023	8/28/2023	11/27/2023
PCE	< 7.0 U	< 7.5 U	< 7.0 U	< 6.6 U
TCE	< 5.5 U	< 5.9 U	< 5.5 U	< 5.2 U

SV-04-21				
Sample Depth (ft. bgs):	22.5-23			
Date Collected:	3/20/2023	6/6/2023	8/28/2023	11/27/2023
PCE	< 7.0 U	< 7.5 U	< 6.8 U	< 6.7 U
TCE	18	17	16	16

SV-03-21				
Sample Depth (ft. bgs):	11.5-12			
Date Collected:	3/20/2023	6/6/2023	8/28/2023	11/27/2023
PCE	< 7.0 U	< 7.0 U	< 7.0 U	< 6.6 U
TCE	< 5.6 U	< 5.6 U	< 5.5 U	< 5.3 U

LEGEND

- ▲ MONITORING WELL
- ▲ SOIL VAPOR MONITORING POINT
- ▭ CURRENT OR FORMER RACER PROPERTY

NOTES:

- 1) ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER CUBIC METER (µg/m³)
- 2) FT. BGS - FEET BELOW GROUND SURFACE
- 3) SOG - SLAB-ON-GRADE
- 4) SSVIAC - SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA
- 5) CRITERIA LISTED ARE FROM THE EGLE FORMER FIERO ASSEMBLY SITE-SPECIFIC CRITERIA EVALUATION DATED APRIL 21, 2020.
- 6) < - NOT DETECTED
- 7) U - COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT.
- 8) DUPLICATE ANALYSES ARE PRESENTED IN ()
- 9) SAMPLES ANALYZED BY USEPA TO-15 METHODS.



	Fiero SSVIAC Soil Vapor Residential SOG Criteria	Fiero SSVIAC Soil Vapor Residential Basement Criteria
Analyte		
Tetrachloroethene (PCE)	1,400	1,400
Trichloroethene (TCE)	67	67

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PONTIAC, MICHIGAN

SUMMARY OF SOIL VAPOR RESULTS

ARCADIS

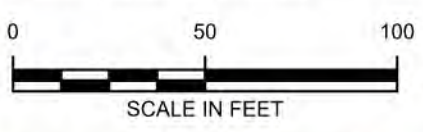
FIGURE
8



CITY: NOVI, MI DIV: ENV DB: TRY PIC: J. BARRETT PM: T. LINDER TM: L. CRISP TR: PROJECT NUMBER: 30167840 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T: ENV\Novi\Brighton, MI\Motors\Liquidation\Company\PontiacNorth\Campus\Documents\Former, Fiero Property\FTMP Summary\2023\FieroSummaryReport\Figures\FieroSummaryReportFigs.aprx PLOTTED: 3/18/2024 12:18 PM BY: kainaabaugh

LEGEND

- ▲ MONITORING WELL
- ▲ SOIL VAPOR MONITORING POINT
- ▭ CURRENT OR FORMER RACER PROPERTY
- MANN-KENDALL ANALYSIS RESULTS**
- DECREASING TREND
- NO SIGNIFICANT TREND
- INCREASING TREND
- RESULTS DID NOT MEET CRITERIA FOR VALID MANN-KENDALL ANALYSIS



SCALE IN FEET

RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

**SOIL VAPOR STABILITY ANALYSIS
TETRACHLOROETHENE**



FIGURE
9A

Service Layer Credits: Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA
Google Earth Pro Aerial Dated March 19, 2021



Appendix A

Laboratory Analytical Reports



Analytical Laboratory Report

Report ID: S45983.01(01)
Generated on 03/09/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S45983.01-S45983.04
Project: 30167840.00005 / RACER PNC
Collected Date(s): 03/06/2023 - 03/07/2023
Submitted Date/Time: 03/07/2023 16:05
Sampled by: Leticia Ferreria / Sommer Guy
P.O. #: 30167840.00005

Table of Contents

Cover Page (Page 1)
General Report Notes (Page 2)
Report Narrative (Page 2)
Laboratory Certifications (Page 3)
Qualifier Descriptions (Page 3)
Glossary of Abbreviations (Page 3)
Method Summary (Page 4)
Sample Summary (Page 5)

Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S45983.01	MW-09-22_GW-030623	Groundwater	03/06/23 13:48
S45983.02	tripblank_01	Water	03/06/23 00:01
S45983.03	MW-08-21_GW-030723	Groundwater	03/07/23 13:55
S45983.04	MWF16-23_GW-030723	Groundwater	03/07/23 14:22



Analytical Laboratory Report

Lab Sample ID: S45983.01

Sample Tag: MW-09-22_GW-030623

Collected Date/Time: 03/06/2023 13:48

Matrix: Groundwater

COC Reference: 160085

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	1	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	4	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	148	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S45983.01 (continued)

Sample Tag: MW-09-22_GW-030623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:16, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45983.02

Sample Tag: tripblank_01

Collected Date/Time: 03/06/2023 00:01

Matrix: Water

COC Reference: 160085

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 15:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S45983.02 (continued)

Sample Tag: tripblank_01

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 15:04, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45983.03

Sample Tag: MW-08-21_GW-030723

Collected Date/Time: 03/07/2023 13:55

Matrix: Groundwater

COC Reference: 160085

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
1,1-Dichloroethane	9	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	11	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	11	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S45983.03 (continued)

Sample Tag: MW-08-21_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:35, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45983.04

Sample Tag: MWF16-23_GW-030723

Collected Date/Time: 03/07/2023 14:22

Matrix: Groundwater

COC Reference: 160085

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:54, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	12	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	16	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S45983.04 (continued)

Sample Tag: MWF16-23_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:54, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S45983

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:03/07/2023 16:05 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.5
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CONTACT NAME	Alexis Crisp		
COMPANY	Arcadis		
ADDRESS	28550 Cabot Dr #500		
CITY	Novi	STATE MI	ZIP CODE 48377
PHONE NO.	CELL NO.	P.O. NO. 30167840.0000	
E-MAIL ADDRESS	Tiffany.Linder@arcadis.com Alexis.Crisp@arcadis.com		
QUOTE NO.			

CHAIN OF CUSTODY RECORD

CONTACT NAME	Accounts Payable		☐ SAME
COMPANY	Arcadis		
ADDRESS	630 Plaza Dr #600		
CITY	Highlands Ranch	STATE	CO
		ZIP CODE	80129
PHONE NO.	E-MAIL ADDRESS accounts payable.administration@arcadis.com		

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME 30167840.0005/Racer PNC	SAMPLER(S) - PLEASE PRINT/SIGN NAME Leticia Ferreria/Sommer Guy
TURNAROUND TIME REQUIRED	☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ NEDD ☐ OTHER

MATRIX CODE:	W=WATER	GW=GROUNDWATER	VW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR	WS=WASTE

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER
	DATE	TIME										
4598301	03/14/23	1348	MW-09-22-GW-030623	GW	3		X					
20	—	—	trip blank_01	L	1		1					
03	3/17/23	1355	MW-08-21-GW-030723	GW	3		3					
04	3/17/23	1422	MWF-14-23-GW-030723	GW	3		3					

RELINQUISHED BY: SIGNATURE/ORGINIZATION	☐ Sampler	DATE TIME	RELINQUISHED BY: SIGNATURE/ORGINIZATION	DATE TIME	TEMP. ON ARRIVAL	NOTES:
Jommer Shuy		3/1/23 14:40				
Dunay		3/2/23 4:46				
Dunay		3/2/23 7:03				
M. Chilcote		3/4/23 16:05				2.5



Analytical Laboratory Report

Report ID: S45984.01(01)
Generated on 03/10/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S45984.01-S45984.08
Project: 30167840.00005 / RACER PNC
Collected Date(s): 03/06/2023 - 03/07/2023
Submitted Date/Time: 03/07/2023 16:05
Sampled by: Leticia Ferreria / Sommer Guy
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S45984.01	MWF16-16_GW-030623	Groundwater	03/06/23 13:37
S45984.02	MW-14-22_GW-030723	Groundwater	03/07/23 11:34
S45984.03	MW-14-22_GW-030723 MS	Groundwater	03/07/23 11:34
S45984.04	MW-14-22_GW-030723 MSD	Groundwater	03/07/23 11:34
S45984.05	MW-15-22_GW-030723	Groundwater	03/07/23 12:45
S45984.06	MW-13-22_GW-030723	Groundwater	03/07/23 12:51
S45984.07	tripblank_02	Water	03/07/23 00:01
S45984.08	DUP-02_GW-030723	Groundwater	03/07/23 00:01



Analytical Laboratory Report

Lab Sample ID: S45984.01

Sample Tag: MWF16-16_GW-030623

Collected Date/Time: 03/06/2023 13:37

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 14:39, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	8	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	1	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	1	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	8	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	346	1		ug/L	1	127-18-4	E

E-Concentration exceeds calibration range



Analytical Laboratory Report

Lab Sample ID: S45984.01 (continued)

Sample Tag: MWF16-16_GW-030623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 14:39, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 03/08/23 18:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S45984.01 (continued)

Sample Tag: MWVF16-16_GW-030623

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 03/08/23 18:56, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	Not detected	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	Not detected	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	260	10		ug/L	10	127-18-4	Y
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S45984.01 (continued)
Sample Tag: MWF16-16_GW-030623

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 03/08/23 18:56, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S45984.02

Sample Tag: MW-14-22_GW-030723

Collected Date/Time: 03/07/2023 11:34

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 15:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	8	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	1	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	6	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	3	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	15	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	100	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S45984.02 (continued)

Sample Tag: MW-14-22_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 15:26, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45984.03

Sample Tag: MW-14-22_GW-030723 MS

Collected Date/Time: 03/07/2023 11:34

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	52	10		ug/L	1	60-29-7	1
Acetone	51	50		ug/L	1	67-64-1	1
Methyl iodide	48	1		ug/L	1	74-88-4	1
Carbon disulfide	47	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	48	5		ug/L	1	1634-04-4	1
Acrylonitrile	49	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	48	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	45	5		ug/L	1	75-71-8	1
Chloromethane	53	5		ug/L	1	74-87-3	1
Vinyl chloride	52	1		ug/L	1	75-01-4	1
Bromomethane	57	5		ug/L	1	74-83-9	1
Chloroethane	56	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	50	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	52	1		ug/L	1	75-35-4	1
Methylene chloride	49	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	49	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	51	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	56	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	50	1		ug/L	1	67-66-3	1
Bromochloromethane	50	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	53	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	1
2-Hexanone	Not detected	50		ug/L	1	591-78-6	1
Carbon tetrachloride	47	1		ug/L	1	56-23-5	1
Benzene	49	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	47	1		ug/L	1	107-06-2	1
Trichloroethene	62	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	49	1		ug/L	1	78-87-5	1
Bromodichloromethane	48	1		ug/L	1	75-27-4	1
Dibromomethane	48	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	49	1		ug/L	1	10061-01-5	1
Toluene	49	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	48	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	50	1		ug/L	1	79-00-5	1
Tetrachloroethene	138	1		ug/L	1	127-18-4	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S45984.03 (continued)

Sample Tag: MW-14-22_GW-030723 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:20, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	36	1		ug/L	1	110-57-6	1
Dibromochloromethane	45	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	46	1		ug/L	1	106-93-4	1
Chlorobenzene	47	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	46	1		ug/L	1	630-20-6	1
Ethylbenzene	47	1		ug/L	1	100-41-4	1
p,m-Xylene*	93	2		ug/L	1		1
o-Xylene	46	1		ug/L	1	95-47-6	1
Styrene	47	1		ug/L	1	100-42-5	1
Isopropylbenzene	46	5		ug/L	1	98-82-8	1
Bromoform	45	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	47	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	45	1		ug/L	1	96-18-4	1
n-Propylbenzene	46	1		ug/L	1	103-65-1	1
Bromobenzene	48	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	45	1		ug/L	1	108-67-8	1
tert-Butylbenzene	44	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	46	1		ug/L	1	95-63-6	1
sec-Butylbenzene	45	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	44	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	46	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	46	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	46	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	45	1		ug/L	1	526-73-8	1
n-Butylbenzene	45	1		ug/L	1	104-51-8	1
Hexachloroethane	40	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	44	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	45	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	45	5		ug/L	1	87-61-6	1
Naphthalene	45	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	38	5		ug/L	1	91-57-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S45984.04

Sample Tag: MW-14-22_GW-030723 MSD

Collected Date/Time: 03/07/2023 11:34

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:43, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	54	10		ug/L	1	60-29-7	1
Acetone	56	50		ug/L	1	67-64-1	1
Methyl iodide	47	1		ug/L	1	74-88-4	1
Carbon disulfide	46	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	49	5		ug/L	1	1634-04-4	1
Acrylonitrile	53	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	53	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	41	5		ug/L	1	75-71-8	1
Chloromethane	53	5		ug/L	1	74-87-3	1
Vinyl chloride	51	1		ug/L	1	75-01-4	1
Bromomethane	56	5		ug/L	1	74-83-9	1
Chloroethane	56	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	49	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	48	1		ug/L	1	75-35-4	1
Methylene chloride	49	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	49	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	50	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	56	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	50	1		ug/L	1	67-66-3	1
Bromochloromethane	49	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	53	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	52	50		ug/L	1	108-10-1	1
2-Hexanone	54	50		ug/L	1	591-78-6	1
Carbon tetrachloride	47	1		ug/L	1	56-23-5	1
Benzene	48	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	47	1		ug/L	1	107-06-2	1
Trichloroethene	61	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	50	1		ug/L	1	78-87-5	1
Bromodichloromethane	49	1		ug/L	1	75-27-4	1
Dibromomethane	50	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	50	1		ug/L	1	10061-01-5	1
Toluene	48	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	49	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	52	1		ug/L	1	79-00-5	1
Tetrachloroethene	139	1		ug/L	1	127-18-4	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S45984.04 (continued)

Sample Tag: MW-14-22_GW-030723 MSD

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 19:43, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	41	1		ug/L	1	110-57-6	1
Dibromochloromethane	47	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	49	1		ug/L	1	106-93-4	1
Chlorobenzene	47	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	47	1		ug/L	1	630-20-6	1
Ethylbenzene	48	1		ug/L	1	100-41-4	1
p,m-Xylene*	94	2		ug/L	1		1
o-Xylene	47	1		ug/L	1	95-47-6	1
Styrene	47	1		ug/L	1	100-42-5	1
Isopropylbenzene	47	5		ug/L	1	98-82-8	1
Bromoform	48	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	51	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	51	1		ug/L	1	96-18-4	1
n-Propylbenzene	47	1		ug/L	1	103-65-1	1
Bromobenzene	49	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	46	1		ug/L	1	108-67-8	1
tert-Butylbenzene	45	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	46	1		ug/L	1	95-63-6	1
sec-Butylbenzene	45	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	45	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	47	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	48	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	47	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	46	1		ug/L	1	526-73-8	1
n-Butylbenzene	46	1		ug/L	1	104-51-8	1
Hexachloroethane	43	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	49	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	48	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	50	5		ug/L	1	87-61-6	1
Naphthalene	49	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	49	5		ug/L	1	91-57-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S45984.05

Sample Tag: MW-15-22_GW-030723

Collected Date/Time: 03/07/2023 12:45

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 15:49, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S45984.05 (continued)

Sample Tag: MW-15-22_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 15:49, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45984.06

Sample Tag: MW-13-22_GW-030723

Collected Date/Time: 03/07/2023 12:51

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 16:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S45984.06 (continued)

Sample Tag: MW-13-22_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 16:13, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45984.07

Sample Tag: tripblank_02

Collected Date/Time: 03/07/2023 00:01

Matrix: Water

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 16:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S45984.07 (continued)

Sample Tag: tripblank_02

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 16:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45984.08

Sample Tag: DUP-02_GW-030723

Collected Date/Time: 03/07/2023 00:01

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/09/23 10:00	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 17:23, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S45984.08 (continued)

Sample Tag: DUP-02_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/08/23 17:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S45984

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:03/07/2023 16:05 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.5
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # OF 138071

REPORT TO

CONTACT NAME	Alexis Crisp		
COMPANY	Arcadis		
ADDRESS	28550 Cabot Dr #500		
CITY	STATE	ZIP CODE	
PHONE NO.	PO NO.	QUOTE NO.	
E-MAIL ADDRESS	tiffany.linder@arcadis.com		

CHAIN OF CUSTODY RECORD

CONTACT NAME	Accounts Payable		
COMPANY	Arcadis		
ADDRESS	630 Plaza Dr #600		
CITY	STATE	ZIP CODE	
PHONE NO.	E-MAIL ADDRESS		

INVOICE TO

PROJECT NO./NAME	30167346.00005 / Racer PNC		
SAMPLER(S) - PLEASE PRINT/SIGN NAME	Sommer Guy/Leticia Ferreira		
TURNAROUND TIME REQUIRED	□ 1 DAY □ 2 DAYS □ 3 DAYS □ STANDARD □ OTHER		
DELIVERABLES REQUIRED	□ STD □ LEVEL II □ LEVEL III □ LEVEL IV □ EDD □ OTHER		

MATRIX CODE:	GW=GROUNDWATER SL=SLUDGE	WW=WASTEWATER DW=DRINKING WATER	S=SOIL WP=WPIPE	L=LIQUID A=AIR	SD=SOLID W=WASTE
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MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION		MATRIX	# OF BOTTLES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications		Project Locations		Special Instructions	
☐ OHIO VAP	☐ Drinking Water	☐ DoD	☐ NPDES	☐ Detroit	☐ New York
☐ Other					
Run MS/MSD					
tripblank					

RELINQUISHED BY:	Sommer Guy	DATE	3/7/23	TIME	1440
SIGNATURE/ORGANIZATION		DATE	3/7/23	TIME	1440
RECEIVED BY:		DATE	3/7/23	TIME	1605
SIGNATURE/ORGANIZATION		DATE	3/7/23	TIME	1605

RELINQUISHED BY:		DATE		TIME	
SIGNATURE/ORGANIZATION		DATE		TIME	
RECEIVED BY:		DATE		TIME	
SIGNATURE/ORGANIZATION		DATE		TIME	

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S46021.01(01)
Generated on 03/10/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
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Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S46021.01
Project: 30167840.00005 / RACER PNC
Collected Date(s): 03/07/2023
Submitted Date/Time: 03/08/2023 13:25
Sampled by: Leticia Ferreria
P.O. #: 30167840.00005

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S46021.01	MWOS-09R_GW-030723	Groundwater	03/07/23 15:38



Analytical Laboratory Report

Lab Sample ID: S46021.01

Sample Tag: MWOS-09R_GW-030723

Collected Date/Time: 03/07/2023 15:38

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/10/23 10:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 19:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	28	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	3	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	17	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S46021.01 (continued)

Sample Tag: MWOS-09R_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 19:16, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S46021

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:03/08/2023 13:25 Login User: PFD

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.2
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



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www.meritlabs.com

C.O.C. PAGE # OF

138071

REPORT TO

CONTACT NAME	Alexis Crisp		
COMPANY	Arcadis		
ADDRESS	2880 Cabot Dr # 500		
CITY	Novi	STATE	ZIP CODE
PHONE NO.		P.O. NO.	30167840.00005
E-MAIL ADDRESS	Lexis.Crisp@arcadis.com		

CHAIN OF CUSTODY RECORD

CONTACT NAME	Accounts Payable		
COMPANY	Arcadis		
ADDRESS	630 Plaza Dr #60		
CITY	Highlands Ranch	STATE	ZIP CODE
PHONE NO.		E-MAIL ADDRESS	accounts.payable-administration@arcadis.com

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME	Leticia Ferreira		
TURNAROUND TIME REQUIRED	☐ 1 DAY	☐ 2 DAYS	☐ 3 DAYS
DELIVERABLES REQUIRED	☐ STD	☒ LEVEL II	☐ LEVEL III

MATRIX CODE:	GW=GROUNDWATER SL=SLUDGE	WW=WASTEWATER DW=DRINKING WATER	S=SOIL WP=WIPE	L=LIQUID A=AIR	SD=SOLID W=WASTE
--------------	-----------------------------	------------------------------------	-------------------	-------------------	---------------------

MERIT LAB NO. FOR LAB USE ONLY	YEAR	DATE	TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								
							NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER		
48021	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48022	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48023	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48024	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48025	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48026	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48027	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48028	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48029	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48030	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48031	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48032	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48033	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48034	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48035	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48036	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48037	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48038	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48039	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48040	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48041	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48042	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48043	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48044	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48045	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48046	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48047	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48048	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48049	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48050	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48051	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48052	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48053	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48054	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48055	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48056	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48057	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48058	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48059	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48060	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48061	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48062	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48063	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48064	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48065	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48066	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48067	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48068	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48069	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48070	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48071	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48072	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48073	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48074	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48075	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48076	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48077	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48078	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48079	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48080	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48081	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48082	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48083	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48084	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48085	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48086	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48087	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48088	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48089	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48090	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48091	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48092	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48093	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48094	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48095	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48096	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48097	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48098	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48099	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									
48100	2013	7/13	15:38	MWDS-09R-GW-030723	GW3	1									

Certifications	☐ OHIO VAP	☐ Drinking Water
	☐ DoD	☐ NPDES
Project Locations	☐ Detroit	☐ New York
	☐ Other	
Special Instructions		

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
NOTES:	TEMP. ON ARRIVAL	
INITIALS	4.2	

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S46018.01(01)
Generated on 03/10/2023

Report to

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Report Summary

Lab Sample ID(s): S46018.01-S46018.05
Project: 30167840.00005 / RACER PNC
Collected Date(s): 03/07/2023
Submitted Date/Time: 03/08/2023 13:25
Sampled by: Sommer Guy
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S46018.01	MW-06-20_GW-030723	Groundwater	03/07/23 14:58
S46018.02	MWOS-10_GW-030723	Groundwater	03/07/23 15:55
S46018.03	DUP-01_GW-030723	Groundwater	03/07/23 00:01
S46018.04	Tripblank	Water	03/07/23 00:01
S46018.05	MWF16-18_GW-030823	Groundwater	03/07/23 11:35



Analytical Laboratory Report

Lab Sample ID: S46018.01

Sample Tag: MW-06-20_GW-030723

Collected Date/Time: 03/07/2023 14:58

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/10/23 10:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 17:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	14	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S46018.01 (continued)

Sample Tag: MW-06-20_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 17:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S46018.02

Sample Tag: MWOS-10_GW-030723

Collected Date/Time: 03/07/2023 15:55

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/10/23 10:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 18:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	9	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	11	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S46018.02 (continued)

Sample Tag: MWOS-10_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 18:19, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S46018.03

Sample Tag: DUP-01_GW-030723

Collected Date/Time: 03/07/2023 00:01

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/10/23 10:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 18:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	14	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S46018.03 (continued)

Sample Tag: DUP-01_GW-030723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 18:38, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S46018.04

Sample Tag: Tripblank

Collected Date/Time: 03/07/2023 00:01

Matrix: Water

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/10/23 10:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 18:57, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S46018.04 (continued)

Sample Tag: Tripblank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 18:57, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S46018.05

Sample Tag: MWF16-18_GW-030823

Collected Date/Time: 03/07/2023 11:35

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/10/23 10:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 20:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	70	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	1,070	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S46018.05 (continued)

Sample Tag: MWF16-18_GW-030823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/09/23 20:15, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration

Merit Laboratories Login Checklist

Lab Set ID:S46018

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:03/08/2023 13:25 Login User: PFD

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.2
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CONTACT NAME	Alexis Crisp			
COMPANY	Arcadis			
ADDRESS	28550 Cabot Dr #500			
CITY	NOVI	STATE	MI	ZIP CODE 48377
PHONE NO.	FAX NO.		P.O. NO.	30167840.0005
E-MAIL ADDRESS	Tiffany.Linder@arcadis.com Alexis.Crisp@arcadis.com			
QUOTE NO.				

CHAIN OF CUSTODY RECORD

CONTACT NAME	Accounts Payable		☐ SAME
COMPANY	\$ Arcadis		
ADDRESS	630 Plaza Dr #600		
CITY	Highlands Ranch	STATE	CO
		ZIP CODE	80129
PHONE NO.	E-MAIL ADDRESS	accounts@arcadis.com	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME 30167840.0005 / Racer PVC	SAMPLER(S) - PLEASE PRINT/SIGN NAME Summer Gray Sommer	Shuf
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER		
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL I ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ EDD ☐ OTHER		

MATRIX	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
CODE:	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	W=WASTE

[illegible]

4/60/18.01	3/7/23	1458	MW-06-20-GW-030723	GW 3	3	X
02	3/7/23	1555	MW05-10-GW-030723	GW 3	3	X
03	3/7/23	—	DWP-01-GW-030723	GW 3	3	X
04	—	—	tripblank	L 1	1	X
05	3/8/23	1135	MWF16-18-GW-030823	GW 3	3	X

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Donner Day	Sampler	DATE 3/8/23	TIME 1200
RECEIVED BY: SIGNATURE/ORGANIZATION	[Signature]		DATE 3/8/23	TIME 1800
RELINQUISHED BY: SIGNATURE/ORGANIZATION	[Signature]		DATE 3/8/23	TIME 1125
RECEIVED BY: SIGNATURE/ORGANIZATION	DM [Signature]		DATE 3/8/23	TIME 1345

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
NOTES:		TEMP. ON ARRIVAL <u>4.2</u>

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S46108.01(01)
Generated on 03/15/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S46108.01-S46108.02
Project: 30167840 / Racer PNC
Collected Date(s): 03/08/2023
Submitted Date/Time: 03/09/2023 15:20
Sampled by: Leticia Ferreria
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S46108.01	MWOS-08_GW-030823	Groundwater	03/08/23 13:17
S46108.02	MWF16-05_GW-030823	Groundwater	03/08/23 12:08



Analytical Laboratory Report

Lab Sample ID: S46108.01

Sample Tag: MWOS-08_GW-030823

Collected Date/Time: 03/08/2023 13:17

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/13/23 10:58	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/10/23 22:47, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	5	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	1	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S46108.01 (continued)

Sample Tag: MWOS-08_GW-030823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/10/23 22:47, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S46108.02

Sample Tag: MWF16-05_GW-030823

Collected Date/Time: 03/08/2023 12:08

Matrix: Groundwater

COC Reference: 138071

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/13/23 10:58	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/10/23 23:07, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	23	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	623	1		ug/L	1	127-18-4	E

E-Concentration exceeds calibration range



Analytical Laboratory Report

Lab Sample ID: S46108.02 (continued)

Sample Tag: MWF16-05_GW-030823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 03/10/23 23:07, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 03/13/23 18:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S46108.02 (continued)

Sample Tag: MWV16-05_GW-030823

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 03/13/23 18:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	Not detected	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	550	10		ug/L	10	127-18-4	Y
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S46108.02 (continued)

Sample Tag: MWF16-05_GW-030823

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 03/13/23 18:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration

Merit Laboratories Login Checklist

Lab Set ID:S46108

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840 / Racer PNC

Submitted:03/09/2023 15:20 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 3.3
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CONTACT NAME
Alexis Crisp

COMPANY
Aradis

ADDRESS
2850 Cabot Ave #500

CITY
Novi

PHONE NO.
248-7840

E-MAIL ADDRESS
Alexis.Crisp@aradis.com

PRODUCT NO./NAME
20167840 / Rover MC

CHAIN OF CUSTODY RECORD

CONTACT NAME
Accounts Payable

COMPANY
Aradis

ADDRESS
630 Plaza Dr #600

CITY
Highlands Ranch

PHONE NO.
303-784-0008

E-MAIL ADDRESS
accounts payable@aradis.com

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

INVOICE TO

CONTACT NAME
Accounts Payable

COMPANY
Aradis

ADDRESS
630 Plaza Dr #600

CITY
Highlands Ranch

PHONE NO.
303-784-0008

E-MAIL ADDRESS
accounts payable@aradis.com

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

RELINQUISHED BY:
SIGNATURE/ORGANIZATION

RECEIVED BY:
SIGNATURE/ORGANIZATION

RELINQUISHED BY:
SIGNATURE/ORGANIZATION

RECEIVED BY:
SIGNATURE/ORGANIZATION

DATE
03/04/23

DATE
3/6/23

DATE
3/15/23

DATE
3/15/23

TIME
1400

TIME
1400

TIME
1520

TIME
1520

□ Sampler

□ SAME

NOTES:
TEMP. ON ARRIVAL

3.3



Analytical Laboratory Report

Report ID: S47239.01(01)
Generated on 04/13/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S47239.01-S47239.02
Project: 30167840.00005 / RACER PNC
Collected Date(s): 04/07/2023
Submitted Date/Time: 04/07/2023 13:35
Sampled by: Sommer Guy
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S47239.01	tripblank	Water	04/07/23 00:01
S47239.02	MW-16-22_GW-040723	Groundwater	04/07/23 11:48



Analytical Laboratory Report

Lab Sample ID: S47239.01

Sample Tag: tripblank

Collected Date/Time: 04/07/2023 00:01

Matrix: Water

COC Reference: 150908

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	04/13/23 10:30	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/12/23 16:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S47239.01 (continued)

Sample Tag: tripblank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/12/23 16:09, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S47239.02

Sample Tag: MW-16-22_GW-040723

Collected Date/Time: 04/07/2023 11:48

Matrix: Groundwater

COC Reference: 150908

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	04/12/23 10:51	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/12/23 05:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	20	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	10	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	300	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S47239.02 (continued)

Sample Tag: MW-16-22_GW-040723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/12/23 05:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration

Merit Laboratories Login Checklist

Lab Set ID:S47239

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:04/07/2023 13:35 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 5.0
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Analytical Report

3/28/2023

Ms. Lexi Crisp
Arcadis U.S., Inc.
7575 Huntington Park Drive
Suite 130
Columbus OH 43235

Project Name: Racer PNC
Project #: 30167840.00004
Workorder #: 2303510

Dear Ms. Lexi Crisp

The following report includes the data for the above referenced project for sample(s) received on 3/21/2023 at Eurofins Air Toxics LLC.

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

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

Regards,



Jade White
Project Manager

WORK ORDER #: 2303510

Work Order Summary

CLIENT:	Ms. Lexi Crisp Arcadis U.S., Inc. 7575 Huntington Park Drive Suite 130 Columbus, OH 43235	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:		P.O. #	30167840.00004
FAX:		PROJECT #	30167840.00004 Racer PNC
DATE RECEIVED:	03/21/2023	CONTACT:	Jade White
DATE COMPLETED:	03/28/2023		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SV-01-21_SG-032023	TO-15	4.9 "Hg	9.9 psi
02A	SV-02-21_SG-032023	TO-15	5.1 "Hg	10 psi
03A	SV-03-21_SG_032023	TO-15	5.9 "Hg	9.9 psi
04A	SV-04-21_SG-032023	TO-15	5.5 "Hg	10.1 psi
05A	SV-05-21_SG-032023	TO-15	5.7 "Hg	9.8 psi
06A	SV-06-21_SG-032023	TO-15	6.3 "Hg	9.8 psi
07A	DUP-01_SG-032023	TO-15	6.1 "Hg	9.9 psi
08A	Lab Blank	TO-15	NA	NA
09A	CCV	TO-15	NA	NA
10A	LCS	TO-15	NA	NA
10AA	LCSD	TO-15	NA	NA

CERTIFIED BY:



Technical Director

DATE: 03/28/23

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP – 209222, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP – T104704434-22-18, UT NELAP – CA009332022-14, VA NELAP - 12240, WA ELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) CA300005-017

Eurofins Environment Testing Northern California, LLC certifies that the test results contained in this report meet all requirements of the 2016 TNI Standard.

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

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LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2303510

Seven 1 Liter Summa Canister samples were received on March 21, 2023. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

The Chain of Custody (COC) information for sample SV-03-21_SG_032023 did not match the entry on the sample tag with regard to sample identification. The information on the COC was used to process and report the sample.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

N - The identification is based on presumptive evidence.

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

CN - See Case Narrative.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client Sample ID: SV-01-21_SG-032023

Lab ID#: 2303510-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	1.5	5.4	8.0

Client Sample ID: SV-02-21_SG-032023

Lab ID#: 2303510-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	11	5.4	61
Tetrachloroethene	1.0	1.1	6.8	7.6

Client Sample ID: SV-03-21_SG_032023

Lab ID#: 2303510-03A

No Detections Were Found.

Client Sample ID: SV-04-21_SG-032023

Lab ID#: 2303510-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	3.3	5.5	18

Client Sample ID: SV-05-21_SG-032023

Lab ID#: 2303510-05A

No Detections Were Found.

Client Sample ID: SV-06-21_SG-032023

Lab ID#: 2303510-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	8.9	5.7	48

Client Sample ID: DUP-01_SG-032023

Lab ID#: 2303510-07A

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

Client Sample ID: DUP-01_SG-032023

Lab ID#: 2303510-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	13	5.6	68
Tetrachloroethene	1.0	1.2	7.1	8.4



Air Toxics

Client Sample ID: SV-01-21_SG-032023

Lab ID#: 2303510-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032726	Date of Collection:	3/20/23 11:51:00 AM
Dil. Factor:	2.00	Date of Analysis:	3/28/23 12:06 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.0	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Trichloroethene	1.0	1.5	5.4	8.0
trans-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Tetrachloroethene	1.0	Not Detected	6.8	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	96	70-130



Air Toxics

Client Sample ID: SV-02-21_SG-032023

Lab ID#: 2303510-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032727	Date of Collection:	3/20/23 12:24:00 PM
Dil. Factor:	2.02	Date of Analysis:	3/28/23 12:35 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.0	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Trichloroethene	1.0	11	5.4	61
trans-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Tetrachloroethene	1.0	1.1	6.8	7.6

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: SV-03-21_SG_032023

Lab ID#: 2303510-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032728	Date of Collection:	3/20/23 1:14:00 PM
Dil. Factor:	2.08	Date of Analysis:	3/28/23 01:03 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	Not Detected	5.6	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: SV-04-21_SG-032023

Lab ID#: 2303510-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032729	Date of Collection:	3/20/23 2:32:00 PM
Dil. Factor:	2.06	Date of Analysis:	3/28/23 01:32 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	3.3	5.5	18
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: SV-05-21_SG-032023

Lab ID#: 2303510-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032730	Date of Collection:	3/20/23 2:09:00 PM
Dil. Factor:	2.06	Date of Analysis:	3/28/23 02:01 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	Not Detected	5.5	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: SV-06-21_SG-032023

Lab ID#: 2303510-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032716	Date of Collection:	3/20/23 2:54:00 PM
Dil. Factor:	2.11	Date of Analysis:	3/27/23 05:03 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.7	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.2	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.2	Not Detected
Trichloroethene	1.0	8.9	5.7	48
trans-1,2-Dichloroethene	1.0	Not Detected	4.2	Not Detected
Tetrachloroethene	1.0	Not Detected	7.2	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	110	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	98	70-130



Air Toxics

Client Sample ID: DUP-01_SG-032023

Lab ID#: 2303510-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032715	Date of Collection:	3/20/23
Dil. Factor:	2.10	Date of Analysis:	3/27/23 04:34 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.7	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.2	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.2	Not Detected
Trichloroethene	1.0	13	5.6	68
trans-1,2-Dichloroethene	1.0	Not Detected	4.2	Not Detected
Tetrachloroethene	1.0	1.2	7.1	8.4

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	110	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2303510-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032705c	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/27/23 10:24 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	112	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	100	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 2303510-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032702	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/27/23 08:43 AM

Compound	%Recovery
Vinyl Chloride	104
1,1-Dichloroethene	92
cis-1,2-Dichloroethene	90
Trichloroethene	93
trans-1,2-Dichloroethene	90
Tetrachloroethene	95

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	104	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 2303510-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032703	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/27/23 09:10 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	102	70-130
1,1-Dichloroethene	86	70-130
cis-1,2-Dichloroethene	90	70-130
Trichloroethene	89	70-130
trans-1,2-Dichloroethene	90	70-130
Tetrachloroethene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	104	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 2303510-10AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 3032704

Date of Collection: NA

Dil. Factor: 1.00

Date of Analysis: 3/27/23 09:37 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	102	70-130
1,1-Dichloroethene	86	70-130
cis-1,2-Dichloroethene	89	70-130
Trichloroethene	92	70-130
trans-1,2-Dichloroethene	90	70-130
Tetrachloroethene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	104	70-130



Analytical Laboratory Report

Report ID: S49704.01(01)
Generated on 06/16/2023

Report to
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Report Summary
Lab Sample ID(s): S49704.01-S49704.13
Project: 30167840.00005 / RACER PNC
Collected Date(s): 06/07/2023 - 06/09/2023
Submitted Date/Time: 06/13/2023 14:35
Sampled by: Samantha Szpaichler
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

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Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (13 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S49704.01	MWF7-02_GW-060723	Groundwater	06/07/23 14:11
S49704.02	MWF7-02_GW-060723 MS	Groundwater	06/07/23 14:11
S49704.03	MWF7-02_GW-060723 MSD	Groundwater	06/07/23 14:11
S49704.04	MWF16-15_GW-060723	Groundwater	06/07/23 12:57
S49704.05	UNKNOWN-01_GW-060723	Groundwater	06/07/23 15:20
S49704.06	MWF15-01_GW-060723	Groundwater	06/07/23 16:58
S49704.07	MW-08-21_GW-060823	Groundwater	06/08/23 10:50
S49704.08	MWF16-25_GW-060823	Groundwater	06/08/23 12:55
S49704.09	MWF16-17_GW-060823	Groundwater	06/08/23 14:33
S49704.10	MWF16-12_GW-060823	Groundwater	06/08/23 15:58
S49704.11	MWF16-06_GW-060923	Groundwater	06/09/23 12:27
S49704.12	TW-12-22_GW-060823	Groundwater	06/08/23 17:35
S49704.13	Trip Blank	Water	06/08/23 00:01



Analytical Laboratory Report

Lab Sample ID: S49704.01

Sample Tag: MWF7-02_GW-060723

Collected Date/Time: 06/07/2023 14:11

Matrix: Groundwater

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:22	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/15/23 19:33, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	8	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	15	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	2	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	81	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	4	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	84	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.01 (continued)

Sample Tag: MWF7-02_GW-060723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/15/23 19:33, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.02

Sample Tag: MWF7-02_GW-060723 MS

Collected Date/Time: 06/07/2023 14:11

Matrix: Groundwater

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:22	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/15/23 21:10, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	48	10		ug/L	1	60-29-7	1
Acetone	Not detected	50		ug/L	1	67-64-1	1
Methyl iodide	52	1		ug/L	1	74-88-4	1
Carbon disulfide	47	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	55	5		ug/L	1	1634-04-4	1
Acrylonitrile	45	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	51	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	36	5		ug/L	1	75-71-8	1
Chloromethane	48	5		ug/L	1	74-87-3	1
Vinyl chloride	47	1		ug/L	1	75-01-4	1
Bromomethane	45	5		ug/L	1	74-83-9	1
Chloroethane	45	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	38	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	50	1		ug/L	1	75-35-4	1
Methylene chloride	48	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	46	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	60	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	51	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	49	1		ug/L	1	67-66-3	1
Bromochloromethane	51	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	121	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	51	50		ug/L	1	108-10-1	1
2-Hexanone	51	50		ug/L	1	591-78-6	1
Carbon tetrachloride	48	1		ug/L	1	56-23-5	1
Benzene	52	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	48	1		ug/L	1	107-06-2	1
Trichloroethene	55	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	51	1		ug/L	1	78-87-5	1
Bromodichloromethane	51	1		ug/L	1	75-27-4	1
Dibromomethane	56	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	52	1		ug/L	1	10061-01-5	1
Toluene	52	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	54	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	53	1		ug/L	1	79-00-5	1
Tetrachloroethene	138	1		ug/L	1	127-18-4	1

1-Spiked at 50 ug/L



Analytical Laboratory Report

Lab Sample ID: S49704.02 (continued)

Sample Tag: MWVF7-02_GW-060723 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/15/23 21:10, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	50	1		ug/L	1	110-57-6	1
Dibromochloromethane	55	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	56	1		ug/L	1	106-93-4	1
Chlorobenzene	55	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	57	1		ug/L	1	630-20-6	1
Ethylbenzene	55	1		ug/L	1	100-41-4	1
p,m-Xylene*	112	2		ug/L	1		1
o-Xylene	55	1		ug/L	1	95-47-6	1
Styrene	55	1		ug/L	1	100-42-5	1
Isopropylbenzene	56	5		ug/L	1	98-82-8	1
Bromoform	59	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	54	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	53	1		ug/L	1	96-18-4	1
n-Propylbenzene	55	1		ug/L	1	103-65-1	1
Bromobenzene	58	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	57	1		ug/L	1	108-67-8	1
tert-Butylbenzene	53	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	57	1		ug/L	1	95-63-6	1
sec-Butylbenzene	50	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	50	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	52	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	52	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	54	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	53	1		ug/L	1	526-73-8	1
n-Butylbenzene	50	1		ug/L	1	104-51-8	1
Hexachloroethane	58	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	52	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	53	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	54	5		ug/L	1	87-61-6	1
Naphthalene	53	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	47	5		ug/L	1	91-57-6	1

1-Spiked at 50 ug/L



Analytical Laboratory Report

Lab Sample ID: S49704.03

Sample Tag: MWF7-02_GW-060723 MSD

Collected Date/Time: 06/07/2023 14:11

Matrix: Groundwater

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:22	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/15/23 21:29, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	45	10		ug/L	1	60-29-7	1
Acetone	50	50		ug/L	1	67-64-1	1
Methyl iodide	51	1		ug/L	1	74-88-4	1
Carbon disulfide	45	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	54	5		ug/L	1	1634-04-4	1
Acrylonitrile	45	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	50	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	34	5		ug/L	1	75-71-8	1
Chloromethane	47	5		ug/L	1	74-87-3	1
Vinyl chloride	47	1		ug/L	1	75-01-4	1
Bromomethane	43	5		ug/L	1	74-83-9	1
Chloroethane	43	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	36	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	49	1		ug/L	1	75-35-4	1
Methylene chloride	46	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	45	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	58	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	50	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	47	1		ug/L	1	67-66-3	1
Bromochloromethane	50	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	117	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	53	50		ug/L	1	108-10-1	1
2-Hexanone	52	50		ug/L	1	591-78-6	1
Carbon tetrachloride	47	1		ug/L	1	56-23-5	1
Benzene	51	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	46	1		ug/L	1	107-06-2	1
Trichloroethene	55	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	50	1		ug/L	1	78-87-5	1
Bromodichloromethane	49	1		ug/L	1	75-27-4	1
Dibromomethane	55	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	51	1		ug/L	1	10061-01-5	1
Toluene	50	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	53	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	52	1		ug/L	1	79-00-5	1
Tetrachloroethene	135	1		ug/L	1	127-18-4	1

1-Spiked at 50 ug/L



Analytical Laboratory Report

Lab Sample ID: S49704.03 (continued)

Sample Tag: MWF7-02_GW-060723 MSD

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/15/23 21:29, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	50	1		ug/L	1	110-57-6	1
Dibromochloromethane	54	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	55	1		ug/L	1	106-93-4	1
Chlorobenzene	54	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	56	1		ug/L	1	630-20-6	1
Ethylbenzene	55	1		ug/L	1	100-41-4	1
p,m-Xylene*	111	2		ug/L	1		1
o-Xylene	53	1		ug/L	1	95-47-6	1
Styrene	54	1		ug/L	1	100-42-5	1
Isopropylbenzene	56	5		ug/L	1	98-82-8	1
Bromoform	58	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	56	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	54	1		ug/L	1	96-18-4	1
n-Propylbenzene	55	1		ug/L	1	103-65-1	1
Bromobenzene	57	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	57	1		ug/L	1	108-67-8	1
tert-Butylbenzene	52	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	57	1		ug/L	1	95-63-6	1
sec-Butylbenzene	51	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	52	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	52	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	52	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	54	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	54	1		ug/L	1	526-73-8	1
n-Butylbenzene	51	1		ug/L	1	104-51-8	1
Hexachloroethane	59	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	57	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	55	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	56	5		ug/L	1	87-61-6	1
Naphthalene	56	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	51	5		ug/L	1	91-57-6	1

1-Spiked at 50 ug/L



Analytical Laboratory Report

Lab Sample ID: S49704.04

Sample Tag: MWF16-15_GW-060723

Collected Date/Time: 06/07/2023 12:57

Matrix: Groundwater

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 01:03, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	9	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	11	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	4	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.04 (continued)

Sample Tag: MWF16-15_GW-060723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 01:03, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.05

Sample Tag: UNKNOWN-01_GW-060723

Collected Date/Time: 06/07/2023 15:20

Matrix: Groundwater

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	>2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 01:23, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	47	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	29	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.05 (continued)
Sample Tag: UNKNOWN-01_GW-060723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 01:23, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.06

Sample Tag: MWF15-01_GW-060723

Collected Date/Time: 06/07/2023 16:58

Matrix: Groundwater

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 01:43, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.06 (continued)

Sample Tag: MWF15-01_GW-060723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 01:43, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.07

Sample Tag: MW-08-21_GW-060823

Collected Date/Time: 06/08/2023 10:50

Matrix: Groundwater

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 02:02, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	4	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	11	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.07 (continued)

Sample Tag: MW-08-21_GW-060823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 02:02, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.08

Sample Tag: MWF16-25_GW-060823

Collected Date/Time: 06/08/2023 12:55

Matrix: Groundwater

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 02:21, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	3	1		ug/L	1	156-60-5	
1,1-Dichloroethane	3	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	40	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	3	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	1	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.08 (continued)

Sample Tag: MWF16-25_GW-060823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 02:21, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.09

Sample Tag: MWF16-17_GW-060823

Collected Date/Time: 06/08/2023 14:33

Matrix: Groundwater

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 02:40, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	1	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.09 (continued)

Sample Tag: MWF16-17_GW-060823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 02:40, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.10

Sample Tag: MWF16-12_GW-060823

Collected Date/Time: 06/08/2023 15:58

Matrix: Groundwater

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 03:00, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	25	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.10 (continued)
Sample Tag: MWF16-12_GW-060823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 03:00, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.11

Sample Tag: MWF16-06_GW-060923

Collected Date/Time: 06/09/2023 12:27

Matrix: Groundwater

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 03:20, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	5	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	52	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	18	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	9	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	93	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	7	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	5	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	36	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.11 (continued)

Sample Tag: MWF16-06_GW-060923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 03:20, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.12

Sample Tag: TW-12-22_GW-060823

Collected Date/Time: 06/08/2023 17:35

Matrix: Groundwater

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 03:39, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	48	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	10	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	11	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	2	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	13	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	4	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.12 (continued)

Sample Tag: TW-12-22_GW-060823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 03:39, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.13

Sample Tag: Trip Blank

Collected Date/Time: 06/08/2023 00:01

Matrix: Water

COC Reference: 156518

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 00:25, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49704.13 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 00:25, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S49704

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:06/13/2023 14:35 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909

FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01. ☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.4
02. ☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun	
03. ☐ Yes ☒ No ☐ N/A	Samples shipped	
04. ☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box	
05. ☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody		
06. ☒ Yes ☐ No ☐ N/A	COC adequately filled out	
07. ☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab	
08. ☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC	
09. ☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:	
Preservation		
10. ☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation	
11. ☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)	
12. ☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions		
13. ☒ Yes ☐ No ☐ N/A	All bottles intact	
14. ☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used	
15. ☒ Yes ☐ No ☐ N/A	Merit bottles used	
16. ☒ Yes ☐ No ☐ N/A	Sufficient sample volume received	
17. ☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration	
18. ☒ Yes ☐ No ☐ N/A	Samples submitted within holding time	
19. ☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # _____ OF _____

156518

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME		Alexis Crisp	
COMPANY		Arcadis	
ADDRESS		28550 Cabot Dr #500	
CITY	NOVI	STATE	MI
PHONE NO.		ZIP CODE	48377
E-MAIL ADDRESS	krissy.vander@arcadis.com	P.O. NO.	30167840.00005
	alexis.crisp@arcadis.com	QUOTE NO.	

CONTACT NAME		Accounts Payable	
COMPANY		Arcadis	
ADDRESS		630 Plaza Dr #600	
CITY	Highlands Ranch	STATE	CO
PHONE NO.		ZIP CODE	80129
E-MAIL ADDRESS	accounts.payable.administration@arcadis-co		

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME	30167840.00005 / Racer PUC	SAMPLER(S) - PLEASE PRINT/SIGN NAME	Samantha Sepachuk / Samt Sep
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER			
DELIVERABLES REQUIRED ☒ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER			

MATRIX W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE A=AIR WS=WASTE

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Full											☐ Other _____																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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RELINQUISHED BY:	Samantha Sepachuk	DATE	6/9/23	TIME	1701
SIGNATURE/ORGANIZATION	NOVI cold storage / Arcadis	DATE	6/9/23	TIME	1701
RECEIVED BY:	Kelley Reg	DATE	6/13/23	TIME	1335
SIGNATURE/ORGANIZATION		DATE	6/13/23	TIME	1335

RELINQUISHED BY:	John Chilton	DATE	6/13/23	TIME	1435
SIGNATURE/ORGANIZATION		DATE	6/13/23	TIME	1435
SEAL NO.	SEAL INTACT	INITIALS	NOTES:	TEMP. ON ARRIVAL	2.4
SEAL NO.	SEAL INTACT	INITIALS			

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S49707.01(01)
Generated on 06/16/2023

Report to
Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary
Lab Sample ID(s): S49707.01-S49707.07
Project: 30167840.00005 / RACER PNC
Collected Date(s): 06/08/2023 - 06/09/2023
Submitted Date/Time: 06/13/2023 14:35
Sampled by: Sierra Sider
P.O. #: 30167840.00005

Table of Contents

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- General Report Notes (Page 2)
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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S49707.01	MWOS-09R_GW-060823	Groundwater	06/08/23 11:10
S49707.02	DUP-03_GW-060823	Groundwater	06/08/23 00:01
S49707.03	MWOS-08_GW-060823	Groundwater	06/08/23 12:20
S49707.04	MWF16-05_GW-060823	Groundwater	06/08/23 14:15
S49707.05	MWF16-18_GW-060823	Groundwater	06/08/23 15:25
S49707.06	MW-09-22_GW-060823	Groundwater	06/08/23 16:30
S49707.07	Trip Blank	Water	06/09/23 00:01



Analytical Laboratory Report

Lab Sample ID: S49707.01

Sample Tag: MWOS-09R_GW-060823

Collected Date/Time: 06/08/2023 11:10

Matrix: Groundwater

COC Reference: 156519

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 03:59, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
1,1-Dichloroethane	3	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	22	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	3	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	11	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49707.01 (continued)

Sample Tag: MWOS-09R_GW-060823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 03:59, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49707.02

Sample Tag: DUP-03_GW-060823

Collected Date/Time: 06/08/2023 00:01

Matrix: Groundwater

COC Reference: 156519

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 04:19, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
1,1-Dichloroethane	3	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	21	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	3	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	12	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49707.02 (continued)

Sample Tag: DUP-03_GW-060823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 04:19, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49707.03

Sample Tag: MWOS-08_GW-060823

Collected Date/Time: 06/08/2023 12:20

Matrix: Groundwater

COC Reference: 156519

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 04:39, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	2	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	1	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49707.03 (continued)

Sample Tag: MWOS-08_GW-060823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 04:39, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49707.04

Sample Tag: MWF16-05_GW-060823

Collected Date/Time: 06/08/2023 14:15

Matrix: Groundwater

COC Reference: 156519

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 06:36, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/L	20	60-29-7	Y
Acetone	Not detected	1,000		ug/L	20	67-64-1	Y
Methyl iodide	Not detected	20		ug/L	20	74-88-4	Y
Carbon disulfide	Not detected	100		ug/L	20	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	100		ug/L	20	1634-04-4	Y
Acrylonitrile	Not detected	40		ug/L	20	107-13-1	Y
2-Butanone (MEK)	Not detected	500		ug/L	20	78-93-3	Y
Dichlorodifluoromethane	Not detected	100		ug/L	20	75-71-8	Y
Chloromethane	Not detected	100		ug/L	20	74-87-3	Y
Vinyl chloride	Not detected	20		ug/L	20	75-01-4	Y
Bromomethane	Not detected	100		ug/L	20	74-83-9	Y
Chloroethane	Not detected	100		ug/L	20	75-00-3	Y
Trichlorofluoromethane	Not detected	20		ug/L	20	75-69-4	Y
1,1-Dichloroethene	Not detected	20		ug/L	20	75-35-4	Y
Methylene chloride	Not detected	100		ug/L	20	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	20		ug/L	20	156-60-5	Y
1,1-Dichloroethane	Not detected	20		ug/L	20	75-34-3	Y
cis-1,2-Dichloroethene	Not detected	20		ug/L	20	156-59-2	Y
Tetrahydrofuran*	Not detected	1,800		ug/L	20	109-99-9	Y
Chloroform	Not detected	20		ug/L	20	67-66-3	Y
Bromochloromethane	Not detected	20		ug/L	20	74-97-5	Y
1,1,1-Trichloroethane	Not detected	20		ug/L	20	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	1,000		ug/L	20	108-10-1	Y
2-Hexanone	Not detected	1,000		ug/L	20	591-78-6	Y
Carbon tetrachloride	Not detected	20		ug/L	20	56-23-5	Y
Benzene	Not detected	20		ug/L	20	71-43-2	Y
1,2-Dichloroethane	Not detected	20		ug/L	20	107-06-2	Y
Trichloroethene	Not detected	20		ug/L	20	79-01-6	Y
1,2-Dichloropropane	Not detected	20		ug/L	20	78-87-5	Y
Bromodichloromethane	Not detected	20		ug/L	20	75-27-4	Y
Dibromomethane	Not detected	100		ug/L	20	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-01-5	Y
Toluene	Not detected	20		ug/L	20	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	20		ug/L	20	79-00-5	Y
Tetrachloroethene	500	20		ug/L	20	127-18-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S49707.04 (continued)

Sample Tag: MWF16-05_GW-060823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 06:36, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	20		ug/L	20	110-57-6	Y
Dibromochloromethane	Not detected	100		ug/L	20	124-48-1	Y
1,2-Dibromoethane	Not detected	20		ug/L	20	106-93-4	Y
Chlorobenzene	Not detected	20		ug/L	20	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	20		ug/L	20	630-20-6	Y
Ethylbenzene	Not detected	20		ug/L	20	100-41-4	Y
p,m-Xylene*	Not detected	40		ug/L	20		Y
o-Xylene	Not detected	20		ug/L	20	95-47-6	Y
Styrene	Not detected	20		ug/L	20	100-42-5	Y
Isopropylbenzene	Not detected	100		ug/L	20	98-82-8	Y
Bromoform	Not detected	20		ug/L	20	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	20		ug/L	20	79-34-5	Y
1,2,3-Trichloropropane	Not detected	20		ug/L	20	96-18-4	Y
n-Propylbenzene	Not detected	20		ug/L	20	103-65-1	Y
Bromobenzene	Not detected	20		ug/L	20	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	20		ug/L	20	108-67-8	Y
tert-Butylbenzene	Not detected	20		ug/L	20	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	20		ug/L	20	95-63-6	Y
sec-Butylbenzene	Not detected	20		ug/L	20	135-98-8	Y
p-Isopropyltoluene	Not detected	100		ug/L	20	99-87-6	Y
1,3-Dichlorobenzene	Not detected	20		ug/L	20	541-73-1	Y
1,4-Dichlorobenzene	Not detected	20		ug/L	20	106-46-7	Y
1,2-Dichlorobenzene	Not detected	20		ug/L	20	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	20		ug/L	20	526-73-8	Y
n-Butylbenzene	Not detected	20		ug/L	20	104-51-8	Y
Hexachloroethane	Not detected	100		ug/L	20	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	100		ug/L	20	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	100		ug/L	20	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	100		ug/L	20	87-61-6	Y
Naphthalene	Not detected	100		ug/L	20	91-20-3	Y
2-Methylnaphthalene	Not detected	100		ug/L	20	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S49707.05

Sample Tag: MWF16-18_GW-060823

Collected Date/Time: 06/08/2023 15:25

Matrix: Groundwater

COC Reference: 156519

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 05:57, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	110	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	1,040	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S49707.05 (continued)

Sample Tag: MWF16-18_GW-060823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 05:57, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S49707.06

Sample Tag: MW-09-22_GW-060823

Collected Date/Time: 06/08/2023 16:30

Matrix: Groundwater

COC Reference: 156519

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 04:58, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	1	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	4	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	122	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49707.06 (continued)

Sample Tag: MW-09-22_GW-060823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 04:58, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49707.07

Sample Tag: Trip Blank

Collected Date/Time: 06/09/2023 00:01

Matrix: Water

COC Reference: 156519

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 00:44, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49707.07 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 00:44, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S49707

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:06/13/2023 14:35 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.4
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # _____ OF _____ 156519

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Alexis Crisp
COMPANY Arcadis
ADDRESS 28550 Cabot Dr. #500
CITY Novi STATE MI ZIP CODE 48377
PHONE NO. _____ CELL NO. _____ P.O. NO. 30167840.00005
E-MAIL ADDRESS Tiffany.Linder@arcadis.com QUOTE NO. _____
Alexis.Crisp@arcadis.com

CONTACT NAME Accounts Payable ☐ SAME
COMPANY Arcadis
ADDRESS 630 Plaza Dr. #600
CITY Highlands Ranch STATE CO ZIP CODE 80129
PHONE NO. _____ E-MAIL ADDRESS accounts.payable.administration@arcadis.com

PROJECT NO./NAME 30167840.00005/RACER PNC SAMPLER(S) - PLEASE PRINT/SIGN NAME Sierra Sider / [Signature]
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____
DELIVERABLES REQUIRED ☒ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____

MATRIX W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications	
☐ OHIO VAP	☐ Drinking Water
☐ DoD	☐ NPDES
Project Locations	
☐ Detroit	☐ New York
☐ Other _____	
Special Instructions	

MERIT LAB NO. FOR LAB USE ONLY	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives							
	DATE	TIME				NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	
49707.01	6/08/2023	1110	HW05-09R-GW-060823	GW	3								X
.02	6/08/2023	N/A	DUP-03-GW-060823	GW	3								X
.03	6/08/2023	1220	MW05-08-GW-060823	GW	3								X
.04	6/08/2023	1415	MW16-05-GW-060823	GW	3								X
.05	6/08/2023	1525	MW16-18-GW-060823	GW	3								X
.06	6/08/2023	1630	MW-09-22-GW-060823	GW	3								X
.07	6/09/23	-	Trip Blank	W	1								X
(mc)													

RELINQUISHED BY: Sierra Sider ☒ Sampler DATE 6/8/23 TIME 1700
SIGNATURE/ORGANIZATION
RECEIVED BY: Samantha Siper DATE 6/8/23 TIME 1700
SIGNATURE/ORGANIZATION
RELINQUISHED BY: Samantha Siper DATE 6/9/23 TIME 1701
SIGNATURE/ORGANIZATION
RECEIVED BY: NOVI Cold Storage / Arcadis DATE 6/9/23 TIME 1701
SIGNATURE/ORGANIZATION

RELINQUISHED BY: [Signature] DATE 6/13/23 TIME 1335
SIGNATURE/ORGANIZATION
RECEIVED BY: [Signature] DATE 6/13/23 TIME 1335
SIGNATURE/ORGANIZATION
SEAL NO. _____ SEAL INTACT? ☒ YES ☐ NO INITIALS [Initials] NOTES: 2.4
SEAL NO. _____ SEAL INTACT? ☒ YES ☐ NO INITIALS [Initials] TEMP. ON ARRIVAL 6/13/23 1435

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S49708.01(01)
Generated on 06/16/2023

Report to
Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary
Lab Sample ID(s): S49708.01
Project: 30167840.00005 / RACER PNC
Collected Date(s): 06/09/2023
Submitted Date/Time: 06/13/2023 14:35
Sampled by: Unknown
P.O. #: 30167840.00005

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S49708.01	MWF16-16_GW-060923	Groundwater	06/09/23 13:32



Analytical Laboratory Report

Lab Sample ID: S49708.01

Sample Tag: MWF16-16_GW-060923

Collected Date/Time: 06/09/2023 13:32

Matrix: Groundwater

COC Reference: 156520

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 06:16, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	20	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	10	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	400	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S49708.01 (continued)

Sample Tag: MWF16-16_GW-060923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 06:16, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration

Merit Laboratories Login Checklist

Lab Set ID:S49708

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:06/13/2023 14:35 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.4
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



Analytical Laboratory Report

Report ID: S49709.01(01)
Generated on 06/16/2023

Report to
Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary
Lab Sample ID(s): S49709.01
Project: 30167840.00005 / RACER PNC
Collected Date(s): 06/09/2023
Submitted Date/Time: 06/13/2023 14:35
Sampled by: Samantha Szpaichler
P.O. #: 30167840.00005

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- Qualifier Descriptions (Page 3)
- Glossary of Abbreviations (Page 3)
- Method Summary (Page 4)
- Sample Summary (Page 5)


Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

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Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S49709.01	MWF16-22_GW-060923	Groundwater	06/09/23 14:38



Analytical Laboratory Report

Lab Sample ID: S49709.01

Sample Tag: MWF16-22_GW-060923

Collected Date/Time: 06/09/2023 14:38

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 05:17, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	14	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	1	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	3	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	77	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49709.01 (continued)

Sample Tag: MWF16-22_GW-060923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 05:17, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S49709

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:06/13/2023 14:35 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.4
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ____ of ____

Lab Work Order #

[illegible]



Analytical Laboratory Report

Report ID: S49710.01(01)
Generated on 06/16/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S49710.01
Project: 30167840.00005 / RACER PNC
Collected Date(s): 06/12/2023
Submitted Date/Time: 06/13/2023 14:35
Sampled by: Samantha Szpaichler
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S49710.01	MWOS-10_GW-061223	Groundwater	06/12/23 12:33



Analytical Laboratory Report

Lab Sample ID: S49710.01

Sample Tag: MWOS-10_GW-061223

Collected Date/Time: 06/12/2023 12:33

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/16/23 10:27	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 05:37, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	12	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49710.01 (continued)

Sample Tag: MWOS-10_GW-061223

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/23 05:37, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S49710

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:06/13/2023 14:35 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01. ☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.4
02. ☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun	
03. ☐ Yes ☒ No ☐ N/A	Samples shipped	
04. ☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box	
05. ☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody		
06. ☒ Yes ☐ No ☐ N/A	COC adequately filled out	
07. ☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab	
08. ☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC	
09. ☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:	
Preservation		
10. ☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation	
11. ☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)	
12. ☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions		
13. ☒ Yes ☐ No ☐ N/A	All bottles intact	
14. ☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used	
15. ☒ Yes ☐ No ☐ N/A	Merit bottles used	
16. ☒ Yes ☐ No ☐ N/A	Sufficient sample volume received	
17. ☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration	
18. ☒ Yes ☐ No ☐ N/A	Samples submitted within holding time	
19. ☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



Analytical Laboratory Report

Report ID: S49444.01(01)
Generated on 06/12/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S49444.01-S49444.08
Project: RACER PNC / 30167840.00005
Collected Date(s): 06/06/2023 - 06/07/2023
Submitted Date/Time: 06/07/2023 15:10
Sampled by: Samantha Szpaichler
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S49444.01	MW-02-17_GW-060623	Groundwater	06/06/23 10:50
S49444.02	MW-07-20_GW-060623	Groundwater	06/06/23 11:45
S49444.03	MW-05-18_GW-060623	Groundwater	06/06/23 12:45
S49444.04	MW-06-20_GW-060623	Groundwater	06/06/23 14:48
S49444.05	DUP-01_GW-060623	Groundwater	06/06/23 00:01
S49444.06	MWF16-23_GW-060623	Groundwater	06/06/23 15:58
S49444.07	MWF16-07_GW-060723	Groundwater	06/07/23 11:45
S49444.08	Trip Blank	Water	06/07/23 00:01



Analytical Laboratory Report

Lab Sample ID: S49444.01

Sample Tag: MW-02-17_GW-060623

Collected Date/Time: 06/06/2023 10:50

Matrix: Groundwater

COC Reference: 156521

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/23 10:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 05:18, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	1	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	5	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	5	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.01 (continued)

Sample Tag: MW-02-17_GW-060623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 05:18, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.02

Sample Tag: MW-07-20_GW-060623

Collected Date/Time: 06/06/2023 11:45

Matrix: Groundwater

COC Reference: 156521

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/23 10:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 18:11, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	2	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.02 (continued)

Sample Tag: MW-07-20_GW-060623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 18:11, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.03

Sample Tag: MW-05-18_GW-060623

Collected Date/Time: 06/06/2023 12:45

Matrix: Groundwater

COC Reference: 156521

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/23 10:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 05:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	11	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	8	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	2	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.03 (continued)

Sample Tag: MW-05-18_GW-060623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 05:37, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.04

Sample Tag: MW-06-20_GW-060623

Collected Date/Time: 06/06/2023 14:48

Matrix: Groundwater

COC Reference: 156521

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/23 10:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 05:57, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	6	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	12	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.04 (continued)
Sample Tag: MW-06-20_GW-060623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 05:57, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.05

Sample Tag: DUP-01_GW-060623

Collected Date/Time: 06/06/2023 00:01

Matrix: Groundwater

COC Reference: 156521

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/23 10:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 06:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	6	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	12	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.05 (continued)

Sample Tag: DUP-01_GW-060623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 06:16, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.06

Sample Tag: MWF16-23_GW-060623

Collected Date/Time: 06/06/2023 15:58

Matrix: Groundwater

COC Reference: 156521

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/23 10:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 06:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	3	1		ug/L	1	156-60-5	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	8	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	13	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	21	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.06 (continued)
Sample Tag: MWF16-23_GW-060623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 06:35, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.07

Sample Tag: MWF16-07_GW-060723

Collected Date/Time: 06/07/2023 11:45

Matrix: Groundwater

COC Reference: 156521

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/23 10:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 06:55, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.07 (continued)

Sample Tag: MWF16-07_GW-060723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 06:55, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.08

Sample Tag: Trip Blank

Collected Date/Time: 06/07/2023 00:01

Matrix: Water

COC Reference: 156521

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/23 10:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 01:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49444.08 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 01:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S49444

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: RACER PNC / 30167840.00005

Submitted:06/07/2023 15:10 Login User: PFD

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.8
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME				Alexis Crisp			
COMPANY				Arcadis			
ADDRESS				28550 Cabot Dr #500			
CITY				STATE		ZIP CODE	
Novi				MI		48317	
PHONE NO. 1			CELL NO.		P.O. NO.		
					30167840.00005		
E-MAIL ADDRESS					QUOTE NO.		
nffany.linder@arcadis.com alexis.crisp@arcadis.com							

CONTACT NAME Accounts payable		☐ SAME	
COMPANY Arcadis			
ADDRESS 630 Plaza Dr #600			
CITY Highlands Ranch		STATE CO	ZIP CODE 80129
PHONE NO.		E-MAIL ADDRESS accounts.payable.administration@arcadis.com	

PROJECT NO./NAME Racer PNC / FRED 30167840.00005	SAMPLER(S) - PLEASE PRINT/SIGN NAME Samantha Sipachter / <i>[Signature]</i>
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER	
DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications

☐ OHIO VAP ☐ Drinking Water

☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York

☐ Other _____

Special Instructions

MATRIX CODE:	W=WATER	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR	WS=WASTE

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES
	DATE	TIME			
	6/5/23		MW-02-17-D60523	GW	6
49444.01	6/5/23	1050	MW-02-17-GW-D60623	GW	3
.02	6/5/23	1145	MW-07-20-GW-D60623	GW	3
.03	6/5/23	1245	MW-05-18-GW-D60623	GW	3
.04	6/6/23	1448	MW-06-20-GW-D60623	GW	3
.05	6/6/23	-	DUP-01-GW-D60623	GW	3
.06	6/6/23	1558	MWF16-23-GW-D60623	GW	3
.07	6/7/23	1145	MWF16-07-GW-D60723	GW	3
	6/7/23		MWF16-15-GW-D60723	GW	3
.08	6/7/23	-	TRIP BLANK	W	1

[illegible]

RELINQUISHED BY:	<i>Samuel S. Smith</i>	☒ Sampler	DATE	TIME
SIGNATURE/ORGANIZATION	<i>Samuel S. Smith</i>	<i>Aradix</i>	6/7/23	12:30
RECEIVED BY:	<i>Donna Hall</i>		DATE	TIME
SIGNATURE/ORGANIZATION	<i>Donna Hall</i>		6/7/23	12:50
RELINQUISHED BY:	<i>John Smith</i>		DATE	TIME
SIGNATURE/ORGANIZATION	<i>John Smith</i>		6/7/23	15:00
RECEIVED BY:	<i>John Smith</i>		DATE	TIME
SIGNATURE/ORGANIZATION	<i>John Smith</i>		6/7/23	15:10

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL _____ 2.8	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S49450.01(01)
Generated on 06/13/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S49450.01-S49450.08
Project: 30167840.00005 / RACER PNC
Collected Date(s): 06/06/2023
Submitted Date/Time: 06/07/2023 15:10
Sampled by: Sommer Guy
P.O. #: 30167840.00005

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S49450.01	Trip Blank	Water	06/06/23 00:01
S49450.02	MW-15-22_GW-060623	Groundwater	06/06/23 10:00
S49450.03	MW-13-22_GW-060623	Groundwater	06/06/23 13:45
S49450.04	MW-14-22_GW-060623	Groundwater	06/06/23 14:40
S49450.05	MW-14-22_GW-060623 MS	Groundwater	06/06/23 14:40
S49450.06	MW-14-22_GW-060623 MSD	Groundwater	06/06/23 14:40
S49450.07	MW-16-22_GW-060623	Groundwater	06/06/23 16:00
S49450.08	DUP-02_GW-060623	Groundwater	06/06/23 00:01



Analytical Laboratory Report

Lab Sample ID: S49450.01

Sample Tag: Trip Blank

Collected Date/Time: 06/06/2023 00:01

Matrix: Water

COC Reference: 150909

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/12/23 10:10	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 15:16, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49450.01 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 15:16, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49450.02

Sample Tag: MW-15-22_GW-060623

Collected Date/Time: 06/06/2023 10:00

Matrix: Groundwater

COC Reference: 150909

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/12/23 10:10	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 19:28, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49450.02 (continued)

Sample Tag: MW-15-22_GW-060623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 19:28, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49450.03

Sample Tag: MW-13-22_GW-060623

Collected Date/Time: 06/06/2023 13:45

Matrix: Groundwater

COC Reference: 150909

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/12/23 10:10	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 19:48, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49450.03 (continued)
Sample Tag: MW-13-22_GW-060623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 19:48, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S49450.04

Sample Tag: MW-14-22_GW-060623

Collected Date/Time: 06/06/2023 14:40

Matrix: Groundwater

COC Reference: 150909

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/12/23 10:10	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 16:15, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	5	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	1	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	13	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	5	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	22	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	212	1		ug/L	1	127-18-4	E

E-Concentration exceeds calibration range

Lab Sample ID: S49450.04 (continued)

Sample Tag: MW-14-22_GW-060623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 16:15, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 06/12/23 14:58, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	50		ug/L	5	60-29-7	Y
Acetone	Not detected	250		ug/L	5	67-64-1	Y
Methyl iodide	Not detected	5		ug/L	5	74-88-4	Y
Carbon disulfide	Not detected	30		ug/L	5	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	30		ug/L	5	1634-04-4	Y
Acrylonitrile	Not detected	10		ug/L	5	107-13-1	Y
2-Butanone (MEK)	Not detected	130		ug/L	5	78-93-3	Y
Dichlorodifluoromethane	Not detected	30		ug/L	5	75-71-8	Y
Chloromethane	Not detected	30		ug/L	5	74-87-3	Y
Vinyl chloride	Not detected	5		ug/L	5	75-01-4	Y
Bromomethane	Not detected	30		ug/L	5	74-83-9	Y
Chloroethane	Not detected	30		ug/L	5	75-00-3	Y
Trichlorofluoromethane	Not detected	5		ug/L	5	75-69-4	Y
1,1-Dichloroethene	Not detected	5		ug/L	5	75-35-4	Y
Methylene chloride	Not detected	30		ug/L	5	75-09-2	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S49450.04 (continued)

Sample Tag: MW-14-22_GW-060623

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 06/12/23 14:58, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,2-Dichloroethene	Not detected	5		ug/L	5	156-60-5	Y
1,1-Dichloroethane	Not detected	5		ug/L	5	75-34-3	Y
cis-1,2-Dichloroethene	Not detected	5		ug/L	5	156-59-2	Y
Tetrahydrofuran*	Not detected	450		ug/L	5	109-99-9	Y
Chloroform	Not detected	5		ug/L	5	67-66-3	Y
Bromochloromethane	Not detected	5		ug/L	5	74-97-5	Y
1,1,1-Trichloroethane	12	5		ug/L	5	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	250		ug/L	5	108-10-1	Y
2-Hexanone	Not detected	250		ug/L	5	591-78-6	Y
Carbon tetrachloride	Not detected	5		ug/L	5	56-23-5	Y
Benzene	Not detected	5		ug/L	5	71-43-2	Y
1,2-Dichloroethane	Not detected	5		ug/L	5	107-06-2	Y
Trichloroethene	21	5		ug/L	5	79-01-6	Y
1,2-Dichloropropane	Not detected	5		ug/L	5	78-87-5	Y
Bromodichloromethane	Not detected	5		ug/L	5	75-27-4	Y
Dibromomethane	Not detected	30		ug/L	5	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	5		ug/L	5	10061-01-5	Y
Toluene	Not detected	5		ug/L	5	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	5		ug/L	5	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	5		ug/L	5	79-00-5	Y
Tetrachloroethene	187	5		ug/L	5	127-18-4	Y
trans-1,4-Dichloro-2-butene	Not detected	5		ug/L	5	110-57-6	Y
Dibromochloromethane	Not detected	30		ug/L	5	124-48-1	Y
1,2-Dibromoethane	Not detected	5		ug/L	5	106-93-4	Y
Chlorobenzene	Not detected	5		ug/L	5	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	5		ug/L	5	630-20-6	Y
Ethylbenzene	Not detected	5		ug/L	5	100-41-4	Y
p,m-Xylene*	Not detected	10		ug/L	5		Y
o-Xylene	Not detected	5		ug/L	5	95-47-6	Y
Styrene	Not detected	5		ug/L	5	100-42-5	Y
Isopropylbenzene	Not detected	30		ug/L	5	98-82-8	Y
Bromoform	Not detected	5		ug/L	5	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	5		ug/L	5	79-34-5	Y
1,2,3-Trichloropropane	Not detected	5		ug/L	5	96-18-4	Y
n-Propylbenzene	Not detected	5		ug/L	5	103-65-1	Y
Bromobenzene	Not detected	5		ug/L	5	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	5		ug/L	5	108-67-8	Y
tert-Butylbenzene	Not detected	5		ug/L	5	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	5		ug/L	5	95-63-6	Y
sec-Butylbenzene	Not detected	5		ug/L	5	135-98-8	Y
p-Isopropyltoluene	Not detected	30		ug/L	5	99-87-6	Y
1,3-Dichlorobenzene	Not detected	5		ug/L	5	541-73-1	Y
1,4-Dichlorobenzene	Not detected	5		ug/L	5	106-46-7	Y
1,2-Dichlorobenzene	Not detected	5		ug/L	5	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	5		ug/L	5	526-73-8	Y
n-Butylbenzene	Not detected	5		ug/L	5	104-51-8	Y
Hexachloroethane	Not detected	30		ug/L	5	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	30		ug/L	5	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	30		ug/L	5	120-82-1	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S49450.04 (continued)
Sample Tag: MW-14-22_GW-060623

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 06/12/23 14:58, Analyst: NDK (continued)							
Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,3-Trichlorobenzene	Not detected	30		ug/L	5	87-61-6	Y
Naphthalene	Not detected	30		ug/L	5	91-20-3	Y
2-Methylnaphthalene	Not detected	30		ug/L	5	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S49450.05

Sample Tag: MW-14-22_GW-060623 MS

Collected Date/Time: 06/06/2023 14:40

Matrix: Groundwater

COC Reference: 150909

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/12/23 10:10	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 13:38, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	47	10		ug/L	1	60-29-7	1
Acetone	Not detected	50		ug/L	1	67-64-1	1
Methyl iodide	53	1		ug/L	1	74-88-4	1
Carbon disulfide	49	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	53	5		ug/L	1	1634-04-4	1
Acrylonitrile	44	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	50	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	47	5		ug/L	1	75-71-8	1
Chloromethane	48	5		ug/L	1	74-87-3	1
Vinyl chloride	50	1		ug/L	1	75-01-4	1
Bromomethane	47	5		ug/L	1	74-83-9	1
Chloroethane	45	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	45	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	48	1		ug/L	1	75-35-4	1
Methylene chloride	47	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	48	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	49	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	54	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	49	1		ug/L	1	67-66-3	1
Bromochloromethane	50	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	60	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	50	50		ug/L	1	108-10-1	1
2-Hexanone	51	50		ug/L	1	591-78-6	1
Carbon tetrachloride	56	1		ug/L	1	56-23-5	1
Benzene	50	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	47	1		ug/L	1	107-06-2	1
Trichloroethene	73	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	49	1		ug/L	1	78-87-5	1
Bromodichloromethane	50	1		ug/L	1	75-27-4	1
Dibromomethane	54	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	51	1		ug/L	1	10061-01-5	1
Toluene	51	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	52	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	50	1		ug/L	1	79-00-5	1
Tetrachloroethene	260	1		ug/L	1	127-18-4	1E

1-Spiked at 50ug/L

E-Concentration exceeds calibration range



Analytical Laboratory Report

Lab Sample ID: S49450.05 (continued)

Sample Tag: MW-14-22_GW-060623 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 13:38, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	49	1		ug/L	1	110-57-6	1
Dibromochloromethane	53	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	54	1		ug/L	1	106-93-4	1
Chlorobenzene	53	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	55	1		ug/L	1	630-20-6	1
Ethylbenzene	54	1		ug/L	1	100-41-4	1
p,m-Xylene*	109	2		ug/L	1		1
o-Xylene	53	1		ug/L	1	95-47-6	1
Styrene	53	1		ug/L	1	100-42-5	1
Isopropylbenzene	56	5		ug/L	1	98-82-8	1
Bromoform	56	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	51	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	53	1		ug/L	1	96-18-4	1
n-Propylbenzene	56	1		ug/L	1	103-65-1	1
Bromobenzene	56	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	56	1		ug/L	1	108-67-8	1
tert-Butylbenzene	53	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	57	1		ug/L	1	95-63-6	1
sec-Butylbenzene	50	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	51	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	50	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	50	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	51	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	50	1		ug/L	1	526-73-8	1
n-Butylbenzene	51	1		ug/L	1	104-51-8	1
Hexachloroethane	55	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	51	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	53	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	53	5		ug/L	1	87-61-6	1
Naphthalene	53	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	50	5		ug/L	1	91-57-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S49450.06

Sample Tag: MW-14-22_GW-060623 MSD

Collected Date/Time: 06/06/2023 14:40

Matrix: Groundwater

COC Reference: 150909

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/12/23 10:10	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 13:57, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	49	10		ug/L	1	60-29-7	1
Acetone	Not detected	50		ug/L	1	67-64-1	1
Methyl iodide	54	1		ug/L	1	74-88-4	1
Carbon disulfide	48	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	54	5		ug/L	1	1634-04-4	1
Acrylonitrile	43	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	48	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	35	5		ug/L	1	75-71-8	1
Chloromethane	48	5		ug/L	1	74-87-3	1
Vinyl chloride	46	1		ug/L	1	75-01-4	1
Bromomethane	46	5		ug/L	1	74-83-9	1
Chloroethane	44	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	38	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	45	1		ug/L	1	75-35-4	1
Methylene chloride	48	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	47	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	49	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	55	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	50	1		ug/L	1	67-66-3	1
Bromochloromethane	52	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	59	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	1
2-Hexanone	Not detected	50		ug/L	1	591-78-6	1
Carbon tetrachloride	53	1		ug/L	1	56-23-5	1
Benzene	51	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	47	1		ug/L	1	107-06-2	1
Trichloroethene	72	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	51	1		ug/L	1	78-87-5	1
Bromodichloromethane	51	1		ug/L	1	75-27-4	1
Dibromomethane	55	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	53	1		ug/L	1	10061-01-5	1
Toluene	51	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	53	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	51	1		ug/L	1	79-00-5	1
Tetrachloroethene	253	1		ug/L	1	127-18-4	1E

1-Spiked at 50ug/L

E-Concentration exceeds calibration range



Analytical Laboratory Report

Lab Sample ID: S49450.06 (continued)
Sample Tag: MW-14-22_GW-060623 MSD

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 13:57, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	49	1		ug/L	1	110-57-6	1
Dibromochloromethane	55	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	55	1		ug/L	1	106-93-4	1
Chlorobenzene	54	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	56	1		ug/L	1	630-20-6	1
Ethylbenzene	55	1		ug/L	1	100-41-4	1
p,m-Xylene*	111	2		ug/L	1		1
o-Xylene	54	1		ug/L	1	95-47-6	1
Styrene	55	1		ug/L	1	100-42-5	1
Isopropylbenzene	56	5		ug/L	1	98-82-8	1
Bromoform	57	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	54	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	53	1		ug/L	1	96-18-4	1
n-Propylbenzene	56	1		ug/L	1	103-65-1	1
Bromobenzene	57	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	57	1		ug/L	1	108-67-8	1
tert-Butylbenzene	53	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	58	1		ug/L	1	95-63-6	1
sec-Butylbenzene	51	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	53	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	53	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	53	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	54	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	53	1		ug/L	1	526-73-8	1
n-Butylbenzene	52	1		ug/L	1	104-51-8	1
Hexachloroethane	57	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	51	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	55	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	56	5		ug/L	1	87-61-6	1
Naphthalene	55	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	51	5		ug/L	1	91-57-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S49450.07

Sample Tag: MW-16-22_GW-060623

Collected Date/Time: 06/06/2023 16:00

Matrix: Groundwater

COC Reference: 150909

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/12/23 10:10	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 21:06, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	10	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	10	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	180	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S49450.07 (continued)

Sample Tag: MW-16-22_GW-060623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 21:06, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S49450.08

Sample Tag: DUP-02_GW-060623

Collected Date/Time: 06/06/2023 00:01

Matrix: Groundwater

COC Reference: 150909

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/12/23 10:10	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 20:08, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S49450.08 (continued)

Sample Tag: DUP-02_GW-060623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/23 20:08, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S49450

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:06/07/2023 15:10 Login User: PFD

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.8
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Alexis Crisp			CONTACT NAME Accounts Payable			☐ SAME		
COMPANY Arcadis			COMPANY Arcadis					
ADDRESS 28550 Cabot Dr #500			ADDRESS 630 Plaza Dr #600					
CITY Novi		STATE MI	ZIP CODE 48377		CITY Highlands Ranch		STATE CO	ZIP CODE 80129
PHONE NO.		CELL NO.	P.O. NO. 30167840.00005		PHONE NO.		E-MAIL ADDRESS accounts.payable.administration@arcadis.com	
E-MAIL ADDRESS tiffany.linder@arcadis.com Alexis.Crisp@arcadis.com			QUOTE NO.		ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)			

[illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Summer Day</i>	☒ Sampler	DATE	TIME	RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Don White</i>	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>Summer Day</i>		6/6/23	1630	RECEIVED BY: SIGNATURE/ORGANIZATION	<i>Kate</i>	6/13/23	15:21
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Summer Day</i>		DATE	TIME	SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL <i>2.8</i>
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>Don White</i>		6/7/23	1236	SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



6/17/2023

Ms. Lexi Crisp
Arcadis U.S., Inc.
7575 Huntington Park Drive
Suite 130
Columbus OH 43235

Project Name: Racer PNC
Project #: 30167840
Workorder #: 2306190

Dear Ms. Lexi Crisp

The following report includes the data for the above referenced project for sample(s) received on 6/7/2023 at Eurofins Air Toxics LLC.

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

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

Regards,



Jade White
Project Manager

WORK ORDER #: 2306190

Work Order Summary

CLIENT: Ms. Lexi Crisp
Arcadis U.S., Inc.
7575 Huntington Park Drive
Suite 130
Columbus, OH 43235

BILL TO: Accounts Payable
Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

PHONE:

FAX:

DATE RECEIVED: 06/07/2023

DATE COMPLETED: 06/17/2023

P.O. # 30167840.00004

PROJECT # 30167840 Racer PNC

CONTACT: Jade White

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SV-01-21_SG-060523	TO-15	4.7 "Hg	10 psi
02A	SV-02-21_SG-060523	TO-15	6.5 "Hg	10 psi
03A	SV-06-21_SG-060523	TO-15	6.3 "Hg	10 psi
04A	SV-05-21_SG-060523	TO-15	7.3 "Hg	9.9 psi
05A	SV-03-21_SG-060523	TO-15	5.9 "Hg	9.9 psi
06A	SV-04-21_SG-060523	TO-15	7.1 "Hg	10 psi
07A	DUP-01_SG-060523	TO-15	6.9 "Hg	10 psi
08A	Lab Blank	TO-15	NA	NA
09A	CCV	TO-15	NA	NA
10A	LCS	TO-15	NA	NA
10AA	LCSD	TO-15	NA	NA

CERTIFIED BY:



Technical Director

DATE: 06/17/23

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP – 209222, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP – T104704434-22-18, UT NELAP – CA009332022-14, VA NELAP - 12240, WA ELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) CA300005-017

Eurofins Environment Testing Northern California, LLC certifies that the test results contained in this report meet all requirements of the 2016 TNI Standard.

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2306190

Seven 1 Liter Summa Canister samples were received on June 07, 2023. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

N - The identification is based on presumptive evidence.

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

CN - See Case Narrative.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client Sample ID: SV-01-21_SG-060523

Lab ID#: 2306190-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	1.7	5.3	9.3
Tetrachloroethene	1.0	1.1	6.7	7.5

Client Sample ID: SV-02-21_SG-060523

Lab ID#: 2306190-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	9.3	5.8	50
Tetrachloroethene	1.1	1.3	7.2	8.8

Client Sample ID: SV-06-21_SG-060523

Lab ID#: 2306190-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	2.7	5.7	15

Client Sample ID: SV-05-21_SG-060523

Lab ID#: 2306190-04A

No Detections Were Found.

Client Sample ID: SV-03-21_SG-060523

Lab ID#: 2306190-05A

No Detections Were Found.

Client Sample ID: SV-04-21_SG-060523

Lab ID#: 2306190-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	3.1	5.9	17

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

Client Sample ID: DUP-01_SG-060523

Lab ID#: 2306190-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	10	5.8	54
Tetrachloroethene	1.1	1.2	7.4	8.1

Client Sample ID: SV-01-21_SG-060523

Lab ID#: 2306190-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3061617	Date of Collection:	6/5/23 10:14:00 AM
Dil. Factor:	1.99	Date of Analysis:	6/16/23 08:25 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.5	Not Detected
1,1-Dichloroethene	1.0	Not Detected	3.9	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	3.9	Not Detected
Trichloroethene	1.0	1.7	5.3	9.3
trans-1,2-Dichloroethene	1.0	Not Detected	3.9	Not Detected
Tetrachloroethene	1.0	1.1	6.7	7.5

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	119	70-130
4-Bromofluorobenzene	115	70-130

Client Sample ID: SV-02-21_SG-060523

Lab ID#: 2306190-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3061618	Date of Collection:	6/5/23 12:23:00 PM
Dil. Factor:	2.14	Date of Analysis:	6/16/23 08:54 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.7	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.2	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Trichloroethene	1.1	9.3	5.8	50
trans-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Tetrachloroethene	1.1	1.3	7.2	8.8

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	119	70-130
4-Bromofluorobenzene	117	70-130

Client Sample ID: SV-06-21_SG-060523

Lab ID#: 2306190-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3061619	Date of Collection:	6/5/23 12:53:00 PM
Dil. Factor:	2.13	Date of Analysis:	6/16/23 09:22 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.7	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.2	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Trichloroethene	1.1	2.7	5.7	15
trans-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Tetrachloroethene	1.1	Not Detected	7.2	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	122	70-130
4-Bromofluorobenzene	115	70-130

Client Sample ID: SV-05-21_SG-060523

Lab ID#: 2306190-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3061620	Date of Collection:	6/5/23 1:14:00 PM
Dil. Factor:	2.21	Date of Analysis:	6/16/23 09:51 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	Not Detected	5.9	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Tetrachloroethene	1.1	Not Detected	7.5	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	117	70-130
4-Bromofluorobenzene	116	70-130

Client Sample ID: SV-03-21_SG-060523

Lab ID#: 2306190-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3061621	Date of Collection:	6/5/23 12:26:00 PM
Dil. Factor:	2.08	Date of Analysis:	6/16/23 10:20 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	Not Detected	5.6	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	116	70-130
4-Bromofluorobenzene	116	70-130

Client Sample ID: SV-04-21_SG-060523

Lab ID#: 2306190-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3061622	Date of Collection:	6/5/23 12:44:00 PM
Dil. Factor:	2.20	Date of Analysis:	6/16/23 10:48 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	3.1	5.9	17
trans-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Tetrachloroethene	1.1	Not Detected	7.5	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	122	70-130
4-Bromofluorobenzene	114	70-130

Client Sample ID: DUP-01_SG-060523

Lab ID#: 2306190-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3061623	Date of Collection:	6/5/23
Dil. Factor:	2.18	Date of Analysis:	6/16/23 11:17 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Trichloroethene	1.1	10	5.8	54
trans-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Tetrachloroethene	1.1	1.2	7.4	8.1

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	121	70-130
4-Bromofluorobenzene	114	70-130

Client Sample ID: Lab Blank

Lab ID#: 2306190-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3061606c	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 6/16/23 12:24 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	117	70-130
4-Bromofluorobenzene	114	70-130

Client Sample ID: CCV

Lab ID#: 2306190-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3061605	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 6/16/23 11:47 AM

Compound	%Recovery
Vinyl Chloride	79
1,1-Dichloroethene	84
cis-1,2-Dichloroethene	89
Trichloroethene	88
trans-1,2-Dichloroethene	84
Tetrachloroethene	99

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	113	70-130
4-Bromofluorobenzene	116	70-130

Client Sample ID: LCS

Lab ID#: 2306190-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 3061603

Date of Collection: NA

Dil. Factor: 1.00

Date of Analysis: 6/16/23 10:48 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	79	70-130
1,1-Dichloroethene	81	70-130
cis-1,2-Dichloroethene	88	70-130
Trichloroethene	94	70-130
trans-1,2-Dichloroethene	84	70-130
Tetrachloroethene	103	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	118	70-130
4-Bromofluorobenzene	117	70-130

Client Sample ID: LCSD

Lab ID#: 2306190-10AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3061604	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 6/16/23 11:14 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	82	70-130
1,1-Dichloroethene	83	70-130
cis-1,2-Dichloroethene	88	70-130
Trichloroethene	90	70-130
trans-1,2-Dichloroethene	86	70-130
Tetrachloroethene	100	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	118	70-130
4-Bromofluorobenzene	115	70-130



Analytical Laboratory Report

Report ID: S53170.01(01)
Generated on 09/13/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX: 248-994-2241
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S53170.01-S53170.02
Project: Racer PNC / 30167840.00005
Collected Date(s): 09/07/2023
Submitted Date/Time: 09/08/2023 14:50
Sampled by: Sommer Guy
P.O. #: 30167840.00005

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

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Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S53170.01	Trip Blank	Liquid	09/07/23 00:01
S53170.02	MW-16-22_GW-090723	Groundwater	09/07/23 14:43



Analytical Laboratory Report

Lab Sample ID: S53170.01

Sample Tag: Trip Blank

Collected Date/Time: 09/07/2023 00:01

Matrix: Liquid

COC Reference: 141362

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/23 10:41	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/12/23 14:11, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S53170.01 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/12/23 14:11, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S53170.02

Sample Tag: MW-16-22_GW-090723

Collected Date/Time: 09/07/2023 14:43

Matrix: Groundwater

COC Reference: 141362

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/23 10:43	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/13/23 06:55, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	120	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	170	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S53170.02 (continued)

Sample Tag: MW-16-22_GW-090723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/13/23 06:55, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration

Merit Laboratories Login Checklist

Lab Set ID:S53170

Client:ARCADIS_NOVI (Arcadis US, Inc. - Novi)

Project: Racer PNC / 30167840.00005

Submitted:09/08/2023 14:50 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909

FAX: 248-994-2241

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01. ☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.5
02. ☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun	
03. ☐ Yes ☒ No ☐ N/A	Samples shipped	
04. ☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box	
05. ☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody		
06. ☒ Yes ☐ No ☐ N/A	COC adequately filled out	
07. ☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab	
08. ☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC	
09. ☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:	
Preservation		
10. ☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation	
11. ☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)	
12. ☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions		
13. ☒ Yes ☐ No ☐ N/A	All bottles intact	
14. ☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used	
15. ☒ Yes ☐ No ☐ N/A	Merit bottles used	
16. ☒ Yes ☐ No ☐ N/A	Sufficient sample volume received	
17. ☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration	
18. ☒ Yes ☐ No ☐ N/A	Samples submitted within holding time	
19. ☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CONTACT NAME				Alexis Crisp			
COMPANY				Arcadis			
ADDRESS				28550 Carbot Dr #500			
CITY				STATE		ZIP CODE	
Novi				MI			
PHONE NO.			FAX NO.		P.O. NO.		
E-MAIL ADDRESS					QUOTE NO.		
Alexis.crisp@arcadis.com tiffany.linder@arcadis.com							

CHAIN OF CUSTODY RECORD

CONTACT NAME		Accounts Payable		☐ SAME	
COMPANY		Arcadis			
ADDRESS		630 Plaza Dr #600			
CITY		Highlands Ranch		STATE	ZIP CODE
				CO	80129
PHONE NO.		E-MAIL ADDRESS			
		accounts.payable.administration@arcadis.com			

INVOICE TO

PROJECT NO./NAME	Racer PNC 30167840.00005	SAMPLER(S) - PLEASE PRINT/SIGN NAME	Summer Guy Summer Guy
TURNAROUND TIME REQUIRED	☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____		
DELIVERABLES REQUIRED	☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____		

MATRIX	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
CODE:	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR
					W=WASTE

Containers & Preservatives

[illegible]

Certifications

☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York
☐ Other _____

Special Instructions

trip blank

RELINQUISHED BY: SIGNATURE/ORGANIZATION	James Ely Arcadis	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	James	DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION	James	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	M. Wilcox	DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL <u>4.5</u>
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S52760.01(01)
Generated on 09/05/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
7575 Huntington Park Drive, Suite 130
Columbus, OH 43235

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S52760.01-S52760.05
Project: 30167840.00005 / RACER PNC
Collected Date(s): 08/28/2023 - 08/29/2023
Submitted Date/Time: 08/29/2023 14:20
Sampled by: Kaylee DeRoo
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S52760.01	MWOS-10_GW-082823	Groundwater	08/28/23 14:50
S52760.02	MW-08-21_GW-082823	Groundwater	08/28/23 16:00
S52760.03	Trip Blank	Water	08/28/23 00:01
S52760.04	MWOS-08_GW-082923	Groundwater	08/29/23 10:45
S52760.05	MWOS-09R_GW-082923	Groundwater	08/29/23 12:10



Analytical Laboratory Report

Lab Sample ID: S52760.01

Sample Tag: MWOS-10_GW-082823

Collected Date/Time: 08/28/2023 14:50

Matrix: Groundwater

COC Reference: 164393

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:11	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/23 19:35, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	8	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	10	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S52760.01 (continued)

Sample Tag: MWOS-10_GW-082823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/23 19:35, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S52760.02

Sample Tag: MW-08-21_GW-082823

Collected Date/Time: 08/28/2023 16:00

Matrix: Groundwater

COC Reference: 164393

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:11	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/23 19:58, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	9	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	12	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S52760.02 (continued)
Sample Tag: MW-08-21_GW-082823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/23 19:58, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S52760.03

Sample Tag: Trip Blank

Collected Date/Time: 08/28/2023 00:01

Matrix: Water

COC Reference: 164393

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:11	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/23 16:03, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S52760.03 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/23 16:03, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S52760.04

Sample Tag: MWOS-08_GW-082923

Collected Date/Time: 08/29/2023 10:45

Matrix: Groundwater

COC Reference: 164393

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:11	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/23 20:22, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	1	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	1	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S52760.04 (continued)

Sample Tag: MWOS-08_GW-082923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/23 20:22, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S52760.05

Sample Tag: MWOS-09R_GW-082923

Collected Date/Time: 08/29/2023 12:10

Matrix: Groundwater

COC Reference: 164393

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:11	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/23 20:46, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
1,1-Dichloroethane	3	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	19	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	4	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	16	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S52760.05 (continued)

Sample Tag: MWOS-09R_GW-082923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/23 20:46, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S52760

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:08/29/2023 14:20 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
7575 Huntington Park Drive, Suite 130
Columbus, OH 43235

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 3.0
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CONTACT NAME Lexi Crisp			
COMPANY Arcadis			
ADDRESS 7575 Huntington Park Drive, Suite 130			
CITY Columbus		STATE OH	ZIP CODE 43235
PHONE NO. 614-985-9163		CELL NO.	P.O. NO. 30167840.00005
E-MAIL ADDRESS Alexis.Crisp@arcadis.com		QUOTE NO.	

CHAIN OF CUSTODY RECORD

CONTACT NAME		Accounts Payable		☐ SAME	
COMPANY		Arcadis			
ADDRESS		630 Plaza Drive #600			
CITY		Highlands Ranch		STATE	CO
				ZIP CODE	80129
PHONE NO.		E-MAIL ADDRESS			
		accounts.payable.administration@arcadis.com			
ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)					

INVOICE TO

PROJECT NO./NAME 30167840.00005/RALER PWC	SAMPLER(S) - PLEASE PRINT/SIGN NAME Kaylee DeRoos / Maxella DeRoos
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ EDD ☐ OTHER _____	

MATRIX	W=WATER	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
CODE:	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR	WS=WASTE

Containers & Preservatives

[illegible]

RELINQUISHED BY:	<i>Kaylee DeLeon / Arcadiu</i>	☒ Sampler	DATE	TIME
SIGNATURE/ORGANIZATION			8/29/23	12:55
RECEIVED BY:	<i>John Miller</i>		DATE	TIME
SIGNATURE/ORGANIZATION			8/29/23	12:55
RELINQUISHED BY:	<i>Sam Miller</i>		DATE	TIME
SIGNATURE/ORGANIZATION			8/29/23	14:20
RECEIVED BY:	<i>M. DeLeon</i>		DATE	TIME
SIGNATURE/ORGANIZATION			8/29/23	14:20

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL 3.0
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S52802.01(01)
Generated on 09/05/2023

Report to
Attention: Alexis Crisp
Arcadis US, Inc.
7575 Huntington Park Drive, Suite 130
Columbus, OH 43235

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary
Lab Sample ID(s): S52802.01-S52802.04
Project: 30167840.00005 / RACER PNC
Collected Date(s): 08/29/2023
Submitted Date/Time: 08/30/2023 13:20
Sampled by: Kaylee DeRoo
P.O. #: 30167840.00005

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S52802.01	MW-06-20_GW-082923	Groundwater	08/29/23 13:30
S52802.02	MWF16-23_GW-082923	Groundwater	08/29/23 14:40
S52802.03	DUP-01_GW-082923	Groundwater	08/29/23 00:01
S52802.04	Trip Blank	Water	08/29/23 00:01



Analytical Laboratory Report

Lab Sample ID: S52802.01

Sample Tag: MW-06-20_GW-082923

Collected Date/Time: 08/29/2023 13:30

Matrix: Groundwater

COC Reference: 164394

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:21	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 03:49, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	9	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S52802.01 (continued)

Sample Tag: MW-06-20_GW-082923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 03:49, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S52802.02

Sample Tag: MWF16-23_GW-082923

Collected Date/Time: 08/29/2023 14:40

Matrix: Groundwater

COC Reference: 164394

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:21	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 04:13, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	3	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	8	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	16	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S52802.02 (continued)

Sample Tag: MWVF16-23_GW-082923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 04:13, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S52802.03

Sample Tag: DUP-01_GW-082923

Collected Date/Time: 08/29/2023 00:01

Matrix: Groundwater

COC Reference: 164394

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:21	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 04:36, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	9	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S52802.03 (continued)

Sample Tag: DUP-01_GW-082923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 04:36, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S52802.04

Sample Tag: Trip Blank

Collected Date/Time: 08/29/2023 00:01

Matrix: Water

COC Reference: 164394

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:54	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 01:28, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S52802.04 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 01:28, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S52802

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:08/30/2023 13:20 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.

7575 Huntington Park Drive, Suite 130
Columbus, OH 43235

Phone: 810-225-1909

FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.1
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CONTACT NAME Alexis Crisp			
COMPANY Arcadis			
ADDRESS 29550 Cabot Dr #500			
CITY Novi		STATE MI	ZIP CODE 48377
PHONE NO. 614-945-9163		CELL NO. P.O. NO. 30167840.00005	
E-MAIL ADDRESS Alexis.Crisp@arcadis.com		QUOTE NO.	

CHAIN OF CUSTODY RECORD

CONTACT NAME Accounts Payable		☐ SAME	
COMPANY Arcadis			
ADDRESS 630 Plaza Dr #600			
CITY Highlands Ranch		STATE CO	ZIP CODE 80129
PHONE NO.		E-MAIL ADDRESS accounts.payable.administration@arcadis.com	

INVOICE TO

PROJECT NO./NAME	30167840.00005/Ruler PNL	SAMPLER(S) - PLEASE PRINT/SIGN NAME	Kaylee Debow / Kaylee Debow
TURNAROUND TIME REQUIRED		☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER	
DELIVERABLES REQUIRED		☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ EDD ☐ OTHER	

MATRIX	W=WATER	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
CODE:	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR	WS=WASTE

Containers & Preservatives

[illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Kaylee DeLoe / Argosys	☒ Sampler	DATE 8/30/23	TIME 11:45
RECEIVED BY: SIGNATURE/ORGANIZATION	Don Norholt		DATE 8/30/23	TIME 3:16
RELINQUISHED BY: SIGNATURE/ORGANIZATION	Don Norholt		DATE 8/30/23	TIME 13:20
RECEIVED BY: SIGNATURE/ORGANIZATION	M. DeLoe		DATE 8/30/23	TIME 13:20

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL 4.1
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S52803.01(01)
Generated on 09/07/2023

Report to
Attention: Alexis Crisp
Arcadis US, Inc.
7575 Huntington Park Drive, Suite 130
Columbus, OH 43235

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary
Lab Sample ID(s): S52803.01-S52803.07
Project: 30167840.00005 / RACER PNC
Collected Date(s): 08/29/2023 - 08/30/2023
Submitted Date/Time: 08/30/2023 13:20
Sampled by: Kaylee DeRoo
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAS analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



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Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



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Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S52803.01	MW-15-22_GW-082923	Groundwater	08/29/23 15:40
S52803.02	MW-13-22_GW-083023	Groundwater	08/30/23 10:30
S52803.03	MW-14-22_GW-083023	Groundwater	08/30/23 11:25
S52803.04	MW-14-22_GW-083023 MS	Groundwater	08/30/23 11:25
S52803.05	MW-14-22_GW-083023 MSD	Groundwater	08/30/23 11:25
S52803.06	DUP-02_GW-083023	Groundwater	08/29/23 00:01
S52803.07	Trip Blank	Water	08/29/23 00:01



Analytical Laboratory Report

Lab Sample ID: S52803.01

Sample Tag: MW-15-22_GW-082923

Collected Date/Time: 08/29/2023 15:40

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:21	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 05:00, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S52803.01 (continued)

Sample Tag: MW-15-22_GW-082923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 05:00, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S52803.02

Sample Tag: MW-13-22_GW-083023

Collected Date/Time: 08/30/2023 10:30

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:21	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 05:24, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S52803.02 (continued)

Sample Tag: MW-13-22_GW-083023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 05:24, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S52803.03

Sample Tag: MW-14-22_GW-083023

Collected Date/Time: 08/30/2023 11:25

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/07/23 12:01	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/06/23 21:47, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	20	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	10	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	200	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S52803.03 (continued)

Sample Tag: MW-14-22_GW-083023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/06/23 21:47, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S52803.04

Sample Tag: MW-14-22_GW-083023 MS

Collected Date/Time: 08/30/2023 11:25

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:11	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/06/23 12:24, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	560	100		ug/L	10	60-29-7	Y1
Acetone	540	500		ug/L	10	67-64-1	Y1
Methyl iodide	580	10		ug/L	10	74-88-4	Y1
Carbon disulfide	560	50		ug/L	10	75-15-0	Y1
tert-Methyl butyl ether (MTBE)	540	50		ug/L	10	1634-04-4	Y1
Acrylonitrile	540	20		ug/L	10	107-13-1	Y1
2-Butanone (MEK)	490	250		ug/L	10	78-93-3	Y1
Dichlorodifluoromethane	470	50		ug/L	10	75-71-8	Y1
Chloromethane	490	50		ug/L	10	74-87-3	Y1
Vinyl chloride	510	10		ug/L	10	75-01-4	Y1
Bromomethane	470	50		ug/L	10	74-83-9	Y1
Chloroethane	470	50		ug/L	10	75-00-3	Y1
Trichlorofluoromethane	470	10		ug/L	10	75-69-4	Y1
1,1-Dichloroethene	510	10		ug/L	10	75-35-4	Y1
Methylene chloride	530	50		ug/L	10	75-09-2	Y1
trans-1,2-Dichloroethene	500	10		ug/L	10	156-60-5	Y1
1,1-Dichloroethane	520	10		ug/L	10	75-34-3	Y1
cis-1,2-Dichloroethene	550	10		ug/L	10	156-59-2	Y1
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y1
Chloroform	500	10		ug/L	10	67-66-3	Y1
Bromochloromethane	550	10		ug/L	10	74-97-5	Y1
1,1,1-Trichloroethane	510	10		ug/L	10	71-55-6	Y1
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y1
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y1
Carbon tetrachloride	510	10		ug/L	10	56-23-5	Y1
Benzene	500	10		ug/L	10	71-43-2	Y1
1,2-Dichloroethane	430	10		ug/L	10	107-06-2	Y1
Trichloroethene	520	10		ug/L	10	79-01-6	Y1
1,2-Dichloropropane	500	10		ug/L	10	78-87-5	Y1
Bromodichloromethane	500	10		ug/L	10	75-27-4	Y1
Dibromomethane	560	50		ug/L	10	74-95-3	Y1
cis-1,3-Dichloropropene	520	10		ug/L	10	10061-01-5	Y1
Toluene	480	10		ug/L	10	108-88-3	Y1
trans-1,3-Dichloropropene	530	10		ug/L	10	10061-02-6	Y1
1,1,2-Trichloroethane	490	10		ug/L	10	79-00-5	Y1
Tetrachloroethene	730	10		ug/L	10	127-18-4	Y1

Y-Elevated reporting limit due to high target concentration 1-Spiked at 500ug/L



Analytical Laboratory Report

Lab Sample ID: S52803.04 (continued)

Sample Tag: MW-14-22_GW-083023 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/06/23 12:24, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	490	10		ug/L	10	110-57-6	Y1
Dibromochloromethane	580	50		ug/L	10	124-48-1	Y1
1,2-Dibromoethane	540	10		ug/L	10	106-93-4	Y1
Chlorobenzene	520	10		ug/L	10	108-90-7	Y1
1,1,1,2-Tetrachloroethane	560	10		ug/L	10	630-20-6	Y1
Ethylbenzene	520	10		ug/L	10	100-41-4	Y1
p,m-Xylene*	1,040	20		ug/L	10		Y1
o-Xylene	510	10		ug/L	10	95-47-6	Y1
Styrene	530	10		ug/L	10	100-42-5	Y1
Isopropylbenzene	520	50		ug/L	10	98-82-8	Y1
Bromoform	590	10		ug/L	10	75-25-2	Y1
1,1,2,2-Tetrachloroethane	520	10		ug/L	10	79-34-5	Y1
1,2,3-Trichloropropane	520	10		ug/L	10	96-18-4	Y1
n-Propylbenzene	530	10		ug/L	10	103-65-1	Y1
Bromobenzene	560	10		ug/L	10	108-86-1	Y1
1,3,5-Trimethylbenzene	530	10		ug/L	10	108-67-8	Y1
tert-Butylbenzene	500	10		ug/L	10	98-06-6	Y1
1,2,4-Trimethylbenzene	530	10		ug/L	10	95-63-6	Y1
sec-Butylbenzene	500	10		ug/L	10	135-98-8	Y1
p-Isopropyltoluene	500	50		ug/L	10	99-87-6	Y1
1,3-Dichlorobenzene	510	10		ug/L	10	541-73-1	Y1
1,4-Dichlorobenzene	510	10		ug/L	10	106-46-7	Y1
1,2-Dichlorobenzene	520	10		ug/L	10	95-50-1	Y1
1,2,3-Trimethylbenzene	500	10		ug/L	10	526-73-8	Y1
n-Butylbenzene	510	10		ug/L	10	104-51-8	Y1
Hexachloroethane	570	50		ug/L	10	67-72-1	Y1
1,2-Dibromo-3-chloropropane	570	50		ug/L	10	96-12-8	Y1
1,2,4-Trichlorobenzene	570	50		ug/L	10	120-82-1	Y1
1,2,3-Trichlorobenzene	560	50		ug/L	10	87-61-6	Y1
Naphthalene	520	50		ug/L	10	91-20-3	Y1
2-Methylnaphthalene	520	50		ug/L	10	91-57-6	Y1

Y-Elevated reporting limit due to high target concentration 1-Spiked at 500ug/L



Analytical Laboratory Report

Lab Sample ID: S52803.05

Sample Tag: MW-14-22_GW-083023 MSD

Collected Date/Time: 08/30/2023 11:25

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:11	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/06/23 12:47, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	600	100		ug/L	10	60-29-7	Y1
Acetone	550	500		ug/L	10	67-64-1	Y1
Methyl iodide	570	10		ug/L	10	74-88-4	Y1
Carbon disulfide	510	50		ug/L	10	75-15-0	Y1
tert-Methyl butyl ether (MTBE)	580	50		ug/L	10	1634-04-4	Y1
Acrylonitrile	530	20		ug/L	10	107-13-1	Y1
2-Butanone (MEK)	500	250		ug/L	10	78-93-3	Y1
Dichlorodifluoromethane	420	50		ug/L	10	75-71-8	Y1
Chloromethane	460	50		ug/L	10	74-87-3	Y1
Vinyl chloride	470	10		ug/L	10	75-01-4	Y1
Bromomethane	470	50		ug/L	10	74-83-9	Y1
Chloroethane	470	50		ug/L	10	75-00-3	Y1
Trichlorofluoromethane	420	10		ug/L	10	75-69-4	Y1
1,1-Dichloroethene	470	10		ug/L	10	75-35-4	Y1
Methylene chloride	550	50		ug/L	10	75-09-2	Y1
trans-1,2-Dichloroethene	480	10		ug/L	10	156-60-5	Y1
1,1-Dichloroethane	510	10		ug/L	10	75-34-3	Y1
cis-1,2-Dichloroethene	540	10		ug/L	10	156-59-2	Y1
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y1
Chloroform	500	10		ug/L	10	67-66-3	Y1
Bromochloromethane	570	10		ug/L	10	74-97-5	Y1
1,1,1-Trichloroethane	480	10		ug/L	10	71-55-6	Y1
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y1
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y1
Carbon tetrachloride	450	10		ug/L	10	56-23-5	Y1
Benzene	470	10		ug/L	10	71-43-2	Y1
1,2-Dichloroethane	440	10		ug/L	10	107-06-2	Y1
Trichloroethene	480	10		ug/L	10	79-01-6	Y1
1,2-Dichloropropane	490	10		ug/L	10	78-87-5	Y1
Bromodichloromethane	500	10		ug/L	10	75-27-4	Y1
Dibromomethane	560	50		ug/L	10	74-95-3	Y1
cis-1,3-Dichloropropene	530	10		ug/L	10	10061-01-5	Y1
Toluene	460	10		ug/L	10	108-88-3	Y1
trans-1,3-Dichloropropene	540	10		ug/L	10	10061-02-6	Y1
1,1,2-Trichloroethane	500	10		ug/L	10	79-00-5	Y1
Tetrachloroethene	680	10		ug/L	10	127-18-4	Y1

Y-Elevated reporting limit due to high target concentration 1-Spiked at 500ug/L



Analytical Laboratory Report

Lab Sample ID: S52803.05 (continued)
Sample Tag: MW-14-22_GW-083023 MSD

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/06/23 12:47, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	480	10		ug/L	10	110-57-6	Y1
Dibromochloromethane	550	50		ug/L	10	124-48-1	Y1
1,2-Dibromoethane	510	10		ug/L	10	106-93-4	Y1
Chlorobenzene	490	10		ug/L	10	108-90-7	Y1
1,1,1,2-Tetrachloroethane	530	10		ug/L	10	630-20-6	Y1
Ethylbenzene	460	10		ug/L	10	100-41-4	Y1
p,m-Xylene*	940	20		ug/L	10		Y1
o-Xylene	470	10		ug/L	10	95-47-6	Y1
Styrene	490	10		ug/L	10	100-42-5	Y1
Isopropylbenzene	460	50		ug/L	10	98-82-8	Y1
Bromoform	570	10		ug/L	10	75-25-2	Y1
1,1,2,2-Tetrachloroethane	490	10		ug/L	10	79-34-5	Y1
1,2,3-Trichloropropane	490	10		ug/L	10	96-18-4	Y1
n-Propylbenzene	460	10		ug/L	10	103-65-1	Y1
Bromobenzene	530	10		ug/L	10	108-86-1	Y1
1,3,5-Trimethylbenzene	480	10		ug/L	10	108-67-8	Y1
tert-Butylbenzene	440	10		ug/L	10	98-06-6	Y1
1,2,4-Trimethylbenzene	480	10		ug/L	10	95-63-6	Y1
sec-Butylbenzene	430	10		ug/L	10	135-98-8	Y1
p-Isopropyltoluene	430	50		ug/L	10	99-87-6	Y1
1,3-Dichlorobenzene	480	10		ug/L	10	541-73-1	Y1
1,4-Dichlorobenzene	480	10		ug/L	10	106-46-7	Y1
1,2-Dichlorobenzene	490	10		ug/L	10	95-50-1	Y1
1,2,3-Trimethylbenzene	460	10		ug/L	10	526-73-8	Y1
n-Butylbenzene	440	10		ug/L	10	104-51-8	Y1
Hexachloroethane	500	50		ug/L	10	67-72-1	Y1
1,2-Dibromo-3-chloropropane	520	50		ug/L	10	96-12-8	Y1
1,2,4-Trichlorobenzene	540	50		ug/L	10	120-82-1	Y1
1,2,3-Trichlorobenzene	550	50		ug/L	10	87-61-6	Y1
Naphthalene	490	50		ug/L	10	91-20-3	Y1
2-Methylnaphthalene	530	50		ug/L	10	91-57-6	Y1

Y-Elevated reporting limit due to high target concentration 1-Spiked at 500ug/L



Analytical Laboratory Report

Lab Sample ID: S52803.06

Sample Tag: DUP-02_GW-083023

Collected Date/Time: 08/29/2023 00:01

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/05/23 11:21	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 05:47, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S52803.06 (continued)

Sample Tag: DUP-02_GW-083023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/02/23 05:47, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S52803.07
Sample Tag: Trip Blank
Collected Date/Time: 08/29/2023 00:01
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	n/a	n/a	Yes	n/a	n/a

Other / Misc.

Method: , Run Date: 08/31/23 13:25, Analyst: JRM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
No Analyses*	Completed				1		

Merit Laboratories Login Checklist

Lab Set ID:S52803

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30167840.00005 / RACER PNC

Submitted:08/30/2023 13:20 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.

7575 Huntington Park Drive, Suite 130

Columbus, OH 43235

Phone: 810-225-1909

FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01. ☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.1
02. ☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun	
03. ☐ Yes ☒ No ☐ N/A	Samples shipped	
04. ☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box	
05. ☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody		
06. ☒ Yes ☐ No ☐ N/A	COC adequately filled out	
07. ☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab	
08. ☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC	
09. ☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:	
Preservation		
10. ☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation	
11. ☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)	
12. ☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions		
13. ☒ Yes ☐ No ☐ N/A	All bottles intact	No trip blank
14. ☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used	
15. ☒ Yes ☐ No ☐ N/A	Merit bottles used	
16. ☒ Yes ☐ No ☐ N/A	Sufficient sample volume received	
17. ☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration	
18. ☒ Yes ☐ No ☐ N/A	Samples submitted within holding time	
19. ☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



Page 1 of 1

Lab Work Order #

Send Results to:	Contact & Company Name:	Telephone:	Preservative	HCl								Preservation Key: A. H ₂ SO ₄ B. HCl C. HNO ₃ D. NaOH E. None F. Other: _____ G. Other: _____ H. Other: _____ Matrix Key: SO - Soil W - Water T - Tissue SE - Sediment SL - Sludge A - Air Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other: _____ 10. Other: _____ NL - NAPL/Oil SW - Sample Wipe Other: _____	
	Address:	Fax:	Filtered (✓)										
	City	State	Zip	E-mail Address:	# of Containers	3							
				E-mail Address:	Container Information								
PARAMETER ANALYSIS & METHOD													
Project Name/Location (City, State): Pontiac, MI													
Project #: 30167840.00005													
Sampler's Printed Name: Kaylee DeRoo													
Sampler's Signature: Kaylee DeRoo													
Method 8260													
REMARKS													
MW-15-22-GW-082923 8/29/23 1540 ✓ GW X 3 containers 52803.01													
MW-13-22-GW-083023 8/30/23 1030 ✓ GW X 3 containers .02													
MW-14-22-GW-083023 8/30/23 1125 ✓ GW X 9 containers .03 / .04 / .05													
DUP-02-GW-082923 8/29/23 — ✓ GW X 3 containers .06													
Trip-Blank 8/29/23 — — W X 1 container .07													
Special Instructions/Comments: MS/MSD = MW-14-22													
Special QA/QC Instructions(✓):													
Laboratory Information and Receipt													
Relinquished By													
Received By													
Relinquished By													
Laboratory Received By													



Analytical Laboratory Report

Report ID: S53169.01(01)
Generated on 09/13/2023

Report to
Attention: Alexis Crisp
Arcadis US, Inc.
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Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX: 248-994-2241
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Report Summary
Lab Sample ID(s): S53169.01-S53169.05
Project: Racer PNC / 30167840.00005
Collected Date(s): 09/07/2023
Submitted Date/Time: 09/08/2023 14:50
Sampled by: Sommer Guy
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S53169.01	Trip Blank	Liquid	09/07/23 00:01
S53169.02	MWF16-05_GW-090723	Groundwater	09/07/23 10:35
S53169.03	MWF16-18_GW-090723	Groundwater	09/07/23 11:28
S53169.04	MWF16-16_GW-090723	Groundwater	09/07/23 12:25
S53169.05	MW-09-22_GW-090723	Groundwater	09/07/23 13:17



Analytical Laboratory Report

Lab Sample ID: S53169.01

Sample Tag: Trip Blank

Collected Date/Time: 09/07/2023 00:01

Matrix: Liquid

COC Reference: 141363

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/23 10:43	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/12/23 14:11, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S53169.01 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/12/23 14:11, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S53169.02

Sample Tag: MWF16-05_GW-090723

Collected Date/Time: 09/07/2023 10:35

Matrix: Groundwater

COC Reference: 141363

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/23 10:43	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/12/23 20:24, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/L	20	60-29-7	Y
Acetone	Not detected	1,000		ug/L	20	67-64-1	Y
Methyl iodide	Not detected	20		ug/L	20	74-88-4	Y
Carbon disulfide	Not detected	100		ug/L	20	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	100		ug/L	20	1634-04-4	Y
Acrylonitrile	Not detected	40		ug/L	20	107-13-1	Y
2-Butanone (MEK)	Not detected	500		ug/L	20	78-93-3	Y
Dichlorodifluoromethane	Not detected	100		ug/L	20	75-71-8	Y
Chloromethane	Not detected	100		ug/L	20	74-87-3	Y
Vinyl chloride	Not detected	20		ug/L	20	75-01-4	Y
Bromomethane	Not detected	100		ug/L	20	74-83-9	Y
Chloroethane	Not detected	100		ug/L	20	75-00-3	Y
Trichlorofluoromethane	Not detected	20		ug/L	20	75-69-4	Y
1,1-Dichloroethene	Not detected	20		ug/L	20	75-35-4	Y
Methylene chloride	Not detected	100		ug/L	20	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	20		ug/L	20	156-60-5	Y
1,1-Dichloroethane	Not detected	20		ug/L	20	75-34-3	Y
cis-1,2-Dichloroethene	Not detected	20		ug/L	20	156-59-2	Y
Tetrahydrofuran*	Not detected	1,800		ug/L	20	109-99-9	Y
Chloroform	Not detected	20		ug/L	20	67-66-3	Y
Bromochloromethane	Not detected	20		ug/L	20	74-97-5	Y
1,1,1-Trichloroethane	Not detected	20		ug/L	20	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	1,000		ug/L	20	108-10-1	Y
2-Hexanone	Not detected	1,000		ug/L	20	591-78-6	Y
Carbon tetrachloride	Not detected	20		ug/L	20	56-23-5	Y
Benzene	Not detected	20		ug/L	20	71-43-2	Y
1,2-Dichloroethane	Not detected	20		ug/L	20	107-06-2	Y
Trichloroethene	Not detected	20		ug/L	20	79-01-6	Y
1,2-Dichloropropane	Not detected	20		ug/L	20	78-87-5	Y
Bromodichloromethane	Not detected	20		ug/L	20	75-27-4	Y
Dibromomethane	Not detected	100		ug/L	20	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-01-5	Y
Toluene	Not detected	20		ug/L	20	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	20		ug/L	20	79-00-5	Y
Tetrachloroethene	490	20		ug/L	20	127-18-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S53169.02 (continued)

Sample Tag: MWF16-05_GW-090723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/12/23 20:24, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	20		ug/L	20	110-57-6	Y
Dibromochloromethane	Not detected	100		ug/L	20	124-48-1	Y
1,2-Dibromoethane	Not detected	20		ug/L	20	106-93-4	Y
Chlorobenzene	Not detected	20		ug/L	20	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	20		ug/L	20	630-20-6	Y
Ethylbenzene	Not detected	20		ug/L	20	100-41-4	Y
p,m-Xylene*	Not detected	40		ug/L	20		Y
o-Xylene	Not detected	20		ug/L	20	95-47-6	Y
Styrene	Not detected	20		ug/L	20	100-42-5	Y
Isopropylbenzene	Not detected	100		ug/L	20	98-82-8	Y
Bromoform	Not detected	20		ug/L	20	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	20		ug/L	20	79-34-5	Y
1,2,3-Trichloropropane	Not detected	20		ug/L	20	96-18-4	Y
n-Propylbenzene	Not detected	20		ug/L	20	103-65-1	Y
Bromobenzene	Not detected	20		ug/L	20	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	20		ug/L	20	108-67-8	Y
tert-Butylbenzene	Not detected	20		ug/L	20	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	20		ug/L	20	95-63-6	Y
sec-Butylbenzene	Not detected	20		ug/L	20	135-98-8	Y
p-Isopropyltoluene	Not detected	100		ug/L	20	99-87-6	Y
1,3-Dichlorobenzene	Not detected	20		ug/L	20	541-73-1	Y
1,4-Dichlorobenzene	Not detected	20		ug/L	20	106-46-7	Y
1,2-Dichlorobenzene	Not detected	20		ug/L	20	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	20		ug/L	20	526-73-8	Y
n-Butylbenzene	Not detected	20		ug/L	20	104-51-8	Y
Hexachloroethane	Not detected	100		ug/L	20	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	100		ug/L	20	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	100		ug/L	20	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	100		ug/L	20	87-61-6	Y
Naphthalene	Not detected	100		ug/L	20	91-20-3	Y
2-Methylnaphthalene	Not detected	100		ug/L	20	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S53169.03

Sample Tag: MWF16-18_GW-090723

Collected Date/Time: 09/07/2023 11:28

Matrix: Groundwater

COC Reference: 141363

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/23 10:43	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/12/23 20:01, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	130	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	30	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	1,090	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S53169.03 (continued)

Sample Tag: MWF16-18_GW-090723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/12/23 20:01, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S53169.04

Sample Tag: MWF16-16_GW-090723

Collected Date/Time: 09/07/2023 12:25

Matrix: Groundwater

COC Reference: 141363

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/23 10:43	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/13/23 06:31, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	10	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	Not detected	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	410	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S53169.04 (continued)

Sample Tag: MWF16-16_GW-090723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/13/23 06:31, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S53169.05

Sample Tag: MW-09-22_GW-090723

Collected Date/Time: 09/07/2023 13:17

Matrix: Groundwater

COC Reference: 141363

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/13/23 10:43	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/12/23 23:56, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	3	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	78	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S53169.05 (continued)

Sample Tag: MW-09-22_GW-090723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/12/23 23:56, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S53169

Client:ARCADIS_NOVI (Arcadis US, Inc. - Novi)

Project: Racer PNC / 30167840.00005

Submitted:09/08/2023 14:50 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909

FAX: 248-994-2241

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.5
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CONTACT NAME				Alexis Crisp							
COMPANY				Arcadis							
ADDRESS								28550 Cabot Dr #500			
CITY						STATE		ZIP CODE			
Novi						MI					
PHONE NO.				FAX NO.				P.O. NO.			
E-MAIL ADDRESS								QUOTE NO.			
Alexis.Crisp@arcadis.com tiffany.Linder@arcadis.com											

CHAIN OF CUSTODY RECORD

CONTACT NAME		Accounts Payable		☐ SAME	
COMPANY		Arcadis			
ADDRESS		630 Plaza Dr #600			
CITY		Highlands Ranch		STATE	80129
PHONE NO.		E-MAIL ADDRESS			
		accounts.payable.administration@arcadis.com			

INVOICE TO

PROJECT NO./NAME Racer PNC / 30167840.00005	SAMPLER(S) - PLEASE PRINT/SIGN NAME Sommer Guy / Sommer Guy
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ RDD ☐ OTHER _____	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications

☐ OHIO VAP ☐ Drinking Water☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York☐ Other

Special Instructions

MATRIX	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
CODE:	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR W=WASTE

[illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Samuel Day / Arcadis</i>	☒ Sampler	DATE 9/8/23	TIME 1400
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 9/8/23	TIME 1400
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 9/8/23	TIME 1400
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 9/8/23	TIME 1400

RELINQUISHED BY: SIGNATURE/ORGANIZATION				DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION				DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL	4.5
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS			

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



9/7/2023

Ms. Lexi Crisp
Arcadis U.S., Inc.
7575 Huntington Park Drive
Suite 130
Columbus OH 43235

Project Name: Racer PNC
Project #:
Workorder #: 2308673

Dear Ms. Lexi Crisp

The following report includes the data for the above referenced project for sample(s) received on 8/30/2023 at Eurofins Air Toxics LLC.

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

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

Regards,



Jade White
Project Manager

WORK ORDER #: 2308673

Work Order Summary

CLIENT: Ms. Lexi Crisp
Arcadis U.S., Inc.
7575 Huntington Park Drive
Suite 130
Columbus, OH 43235

BILL TO: Accounts Payable
Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

PHONE:

P.O. # 30167840.00004

FAX:

PROJECT # Racer PNC

DATE RECEIVED: 08/30/2023

CONTACT: Jade White

DATE COMPLETED: 09/07/2023

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SV-01-21_SG-082823	TO-15	6.7 "Hg	10 psi
02A	SV-02-21_SG-082823	TO-15	6.7 "Hg	9.9 psi
03A	SV-03-21_SG-082823	TO-15	5.5 "Hg	9.9 psi
04A	SV-04-21_SG-082823	TO-15	5.0 "Hg	10psi
05A	SV-05-21_SG-082823	TO-15	5.5 "Hg	10psi
06A	SV-06-21_SG-082823	TO-15	6.5 "Hg	10psi
07A	DUP-01_SG-082823	TO-15	5.5 "Hg	10psi
08A	Lab Blank	TO-15	NA	NA
09A	CCV	TO-15	NA	NA
10A	LCS	TO-15	NA	NA
10AA	LCSD	TO-15	NA	NA

CERTIFIED BY:



DATE: 09/07/23

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP – 209222, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP – T104704434-22-18, UT NELAP – CA009332022-14, VA NELAP - 12240, WA ELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) CA300005-017

Eurofins Environment Testing Northern California, LLC certifies that the test results contained in this report meet all requirements of the 2016 TNI Standard.

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2308673

Seven 1 Liter Summa Canister samples were received on August 30, 2023. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

The Chain of Custody (COC) information for sample DUP-01_SG-082823 did not match the information on the canister with regard to canister barcode. The sample labeled 2480 on the COC is labeled as 4280 on the canister. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

N - The identification is based on presumptive evidence.

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

CN - See Case Narrative.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client Sample ID: SV-01-21_SG-082823

Lab ID#: 2308673-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	6.1	5.8	32
Tetrachloroethene	1.1	2.5	7.3	17

Client Sample ID: SV-02-21_SG-082823

Lab ID#: 2308673-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	11	5.8	60
Tetrachloroethene	1.1	1.8	7.3	12

Client Sample ID: SV-03-21_SG-082823

Lab ID#: 2308673-03A

No Detections Were Found.

Client Sample ID: SV-04-21_SG-082823

Lab ID#: 2308673-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	3.0	5.4	16

Client Sample ID: SV-05-21_SG-082823

Lab ID#: 2308673-05A

No Detections Were Found.

Client Sample ID: SV-06-21_SG-082823

Lab ID#: 2308673-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	3.1	5.8	17

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

Client Sample ID: DUP-01_SG-082823

Lab ID#: 2308673-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	11	5.5	60
Tetrachloroethene	1.0	1.8	7.0	12

Client Sample ID: SV-01-21_SG-082823

Lab ID#: 2308673-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	91090523	Date of Collection: 8/28/23 1:26:00 PM
Dil. Factor:	2.16	Date of Analysis: 9/5/23 10:23 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Trichloroethene	1.1	6.1	5.8	32
trans-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Tetrachloroethene	1.1	2.5	7.3	17

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	109	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: SV-02-21_SG-082823

Lab ID#: 2308673-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	91090524	Date of Collection: 8/28/23 1:47:00 PM
Dil. Factor:	2.15	Date of Analysis: 9/5/23 10:48 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.7	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Trichloroethene	1.1	11	5.8	60
trans-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Tetrachloroethene	1.1	1.8	7.3	12

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	111	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: SV-03-21_SG-082823

Lab ID#: 2308673-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	91090525	Date of Collection: 8/28/23 2:15:00 PM
Dil. Factor:	2.05	Date of Analysis: 9/5/23 11:13 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	Not Detected	5.5	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: SV-04-21_SG-082823

Lab ID#: 2308673-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	91090526	Date of Collection: 8/28/23 2:30:00 PM
Dil. Factor:	2.02	Date of Analysis: 9/5/23 11:38 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.0	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Trichloroethene	1.0	3.0	5.4	16
trans-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Tetrachloroethene	1.0	Not Detected	6.8	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: SV-05-21_SG-082823

Lab ID#: 2308673-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	91090527	Date of Collection: 8/28/23 2:49:00 PM
Dil. Factor:	2.06	Date of Analysis: 9/6/23 12:03 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	Not Detected	5.5	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: SV-06-21_SG-082823

Lab ID#: 2308673-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	91090528	Date of Collection: 8/28/23 3:06:00 PM
Dil. Factor:	2.14	Date of Analysis: 9/6/23 12:28 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.7	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.2	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Trichloroethene	1.1	3.1	5.8	17
trans-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Tetrachloroethene	1.1	Not Detected	7.2	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	112	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: DUP-01_SG-082823

Lab ID#: 2308673-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	91090529	Date of Collection:	8/28/23
Dil. Factor:	2.06	Date of Analysis:	9/6/23 12:53 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	11	5.5	60
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrachloroethene	1.0	1.8	7.0	12

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: Lab Blank

Lab ID#: 2308673-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 91090507f

Date of Collection: NA

Dil. Factor: 1.00

Date of Analysis: 9/5/23 12:30 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: CCV

Lab ID#: 2308673-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 91090503

Date of Collection: NA

Dil. Factor: 1.00

Date of Analysis: 9/5/23 10:13 AM

Compound	%Recovery
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Vinyl Chloride	110
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1,1-Dichloroethene	97
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cis-1,2-Dichloroethene	94
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Trichloroethene	90
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trans-1,2-Dichloroethene	97
--------------------------	----

Tetrachloroethene	112
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Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
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Toluene-d8	99	70-130
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1,2-Dichloroethane-d4	92	70-130
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4-Bromofluorobenzene	93	70-130
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Client Sample ID: LCS

Lab ID#: 2308673-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 91090504

Date of Collection: NA

Dil. Factor: 1.00

Date of Analysis: 9/5/23 10:36 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	104	70-130
1,1-Dichloroethene	89	70-130
cis-1,2-Dichloroethene	90	70-130
Trichloroethene	89	70-130
trans-1,2-Dichloroethene	92	70-130
Tetrachloroethene	110	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: LCSD

Lab ID#: 2308673-10AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	91090505	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 9/5/23 11:00 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	106	70-130
1,1-Dichloroethene	90	70-130
cis-1,2-Dichloroethene	92	70-130
Trichloroethene	90	70-130
trans-1,2-Dichloroethene	92	70-130
Tetrachloroethene	107	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	94	70-130



Analytical Laboratory Report

Report ID: S56305.01(01)
Generated on 12/05/2023

Report to

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Report Summary

Lab Sample ID(s): S56305.01-S56305.05
Project: 30167840.00005 / RACER PNC
Collected Date(s): 11/30/2023
Submitted Date/Time: 12/01/2023 14:50
Sampled by: Sommer Guy
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Starred (*) analytes are not NY NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

For a specific list of accredited analytes, please feel free to contact the laboratory or visit <https://www.meritlabs.com/certifications>.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699 PJLA Testing
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S56305.01	MWOS-10_GW-113023	Groundwater	11/30/23 11:22
S56305.02	MW-08-21_GW-113023	Groundwater	11/30/23 12:13
S56305.03	MW-09-22_GW-113023	Groundwater	11/30/23 13:35
S56305.04	DUP-01_GW-113023	Groundwater	11/30/23 00:01
S56305.05	TW-12-22_GW-113023	Groundwater	11/30/23 15:30



Analytical Laboratory Report

Lab Sample ID: S56305.01

Sample Tag: MWOS-10_GW-113023

Collected Date/Time: 11/30/2023 11:22

Matrix: Groundwater

COC Reference: 141695

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/05/23 11:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 20:39, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	8	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	9	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56305.01 (continued)

Sample Tag: MWOS-10_GW-113023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 20:39, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56305.02

Sample Tag: MW-08-21_GW-113023

Collected Date/Time: 11/30/2023 12:13

Matrix: Groundwater

COC Reference: 141695

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/05/23 11:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 20:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	2	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	12	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56305.02 (continued)

Sample Tag: MW-08-21_GW-113023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 20:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56305.03

Sample Tag: MW-09-22_GW-113023

Collected Date/Time: 11/30/2023 13:35

Matrix: Groundwater

COC Reference: 141695

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/05/23 11:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 21:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	2	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	5	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	169	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56305.03 (continued)

Sample Tag: MW-09-22_GW-113023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 21:19, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56305.04

Sample Tag: DUP-01_GW-113023

Collected Date/Time: 11/30/2023 00:01

Matrix: Groundwater

COC Reference: 141695

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/05/23 11:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 21:39, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	2	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	5	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	191	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56305.04 (continued)

Sample Tag: DUP-01_GW-113023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 21:39, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56305.05

Sample Tag: TW-12-22_GW-113023

Collected Date/Time: 11/30/2023 15:30

Matrix: Groundwater

COC Reference: 141695

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/05/23 11:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 21:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
1,1-Dichloroethane	10	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	33	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	8	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	17	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	1	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	3	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56305.05 (continued)

Sample Tag: TW-12-22_GW-113023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 21:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S56305

Client:ARCADIS_NOVI (Arcadis US, Inc. - Novi)

Project: 30167840.00005 / RACER PNC

Submitted: 12/01/2023 14:50 Login User: PFD

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.7
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



141695

INVOICE TO

CONTACT NAME		Accounts Payable		☐ SAME	
COMPANY					
Arcades					
ADDRESS					
630 Plaza Dr #600					
CITY				STATE	
Highlands Ranch				CO	
PHONE NO.		ZIP CODE			
		80129			
E-MAIL ADDRESS					
		accounts payable-administration@arcades.com			
ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)					

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Demetrius J. Arcades</i>	☒ Sampler	DATE 11/30/23	TIME 1600	RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 12/1/23	TIME 1330	RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 12/1/23	TIME 1450	SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 12/1/23	TIME 1452	SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
					NOTES: TEMP. ON ARRIVAL <u>2.7</u>		

Rev. 5.18.12



Analytical Laboratory Report

Report ID: S56306.01(01)
Generated on 12/05/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S56306.01-S56306.07
Project: 30167840.00005 / RACER PNC
Collected Date(s): 11/30/2023 - 12/01/2023
Submitted Date/Time: 12/01/2023 14:50
Sampled by: Alaina Pitera
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Starred (*) analytes are not NY NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

For a specific list of accredited analytes, please feel free to contact the laboratory or visit <https://www.meritlabs.com/certifications>.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699 PJLA Testing
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S56306.01	Trip Blank	Water	11/30/23 00:01
S56306.02	MW-06-20_GW-113023	Groundwater	11/30/23 10:50
S56306.03	MWF16-23_GW-113023	Groundwater	11/30/23 12:05
S56306.04	MWF16-05_GW-113023	Groundwater	11/30/23 14:20
S56306.05	MW-02-17_GW-120123	Groundwater	12/01/23 10:35
S56306.06	MW-07-20_GW-120123	Groundwater	12/01/23 11:45
S56306.07	MW-05-18_GW-120123	Groundwater	12/01/23 12:55



Analytical Laboratory Report

Lab Sample ID: S56306.01

Sample Tag: Trip Blank

Collected Date/Time: 11/30/2023 00:01

Matrix: Water

COC Reference: 141315

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/05/23 11:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 17:00, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56306.01 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 17:00, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56306.02

Sample Tag: MW-06-20_GW-113023

Collected Date/Time: 11/30/2023 10:50

Matrix: Groundwater

COC Reference: 141315

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/05/23 11:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 22:18, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	3	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	9	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56306.02 (continued)

Sample Tag: MW-06-20_GW-113023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 22:18, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56306.03

Sample Tag: MWF16-23_GW-113023

Collected Date/Time: 11/30/2023 12:05

Matrix: Groundwater

COC Reference: 141315

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/05/23 11:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 22:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	3	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	2	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	8	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	15	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	1	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56306.03 (continued)

Sample Tag: MWF16-23_GW-113023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 22:38, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56306.04

Sample Tag: MWF16-05_GW-113023

Collected Date/Time: 11/30/2023 14:20

Matrix: Groundwater

COC Reference: 141315

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/05/23 11:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/05/23 01:36, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	Not detected	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	Not detected	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	250	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S56306.04 (continued)

Sample Tag: MWF16-05_GW-113023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/05/23 01:36, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S56306.05

Sample Tag: MW-02-17_GW-120123

Collected Date/Time: 12/01/2023 10:35

Matrix: Groundwater

COC Reference: 141315

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/05/23 11:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 22:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	2	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	7	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	6	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56306.05 (continued)

Sample Tag: MW-02-17_GW-120123

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 22:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56306.06

Sample Tag: MW-07-20_GW-120123

Collected Date/Time: 12/01/2023 11:45

Matrix: Groundwater

COC Reference: 141315

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/05/23 11:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 23:18, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	9	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	6	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	6	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	1	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	1	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56306.06 (continued)
Sample Tag: MW-07-20_GW-120123

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 23:18, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56306.07

Sample Tag: MW-05-18_GW-120123

Collected Date/Time: 12/01/2023 12:55

Matrix: Groundwater

COC Reference: 141315

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/05/23 11:05	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 23:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	9	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56306.07 (continued)

Sample Tag: MW-05-18_GW-120123

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 23:38, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S56306

Client:ARCADIS_NOVI (Arcadis US, Inc. - Novi)

Project: 30167840.00005 / RACER PNC

Submitted: 12/01/2023 14:50 Login User: PFD

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.7
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



141315

INVOICE TO

CONTACT NAME Accounts Payable		☐ SAME	
COMPANY Arcadis			
ADDRESS 630 Plaza Dr. #600			
CITY Highlands Ranch		STATE CO	ZIP CODE 80129
PHONE NO.		E-MAIL ADDRESS accounts.payable.administration@arcadis.com	
ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)			

[illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Alquinn Pittman</i>	DATE	TIME	RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>	DATE	TIME	RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>	DATE	TIME	SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL <u>2.7</u>
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>	DATE	TIME	SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	

Rev. 8.18/12



Analytical Laboratory Report

Report ID: S56393.01(01)
Generated on 12/08/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S56393.01-S56393.07
Project: RACER PNC
Collected Date(s): 12/04/2023 - 12/05/2023
Submitted Date/Time: 12/05/2023 13:00
Sampled by: Garrett Link
P.O. #: 30167840

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Starred (*) analytes are not NY NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

For a specific list of accredited analytes, please feel free to contact the laboratory or visit <https://www.meritlabs.com/certifications>.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699 PJLA Testing
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S56393.01	MWF16-15_GW-120423	Groundwater	12/04/23 11:05
S56393.02	UNKNOWN-01_GW-120423	Groundwater	12/04/23 12:20
S56393.03	MWF15-01_GW-120423	Groundwater	12/04/23 14:07
S56393.04	MWF16-07_GW-120523	Groundwater	12/05/23 10:45
S56393.05	MWF16-07_GW-120523 MS	Groundwater	12/05/23 10:45
S56393.06	MWF16-07_GW-120523 MSD	Groundwater	12/05/23 10:45
S56393.07	TRIP BLANK	Water	12/05/23 00:01



Analytical Laboratory Report

Lab Sample ID: S56393.01

Sample Tag: MWF16-15_GW-120423

Collected Date/Time: 12/04/2023 11:05

Matrix: Groundwater

COC Reference: 141696

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/23 11:02	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/07/23 14:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	11	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	4	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56393.01 (continued)

Sample Tag: MWF16-15_GW-120423

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/07/23 14:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56393.02

Sample Tag: UNKNOWN-01_GW-120423

Collected Date/Time: 12/04/2023 12:20

Matrix: Groundwater

COC Reference: 141696

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/23 11:02	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/06/23 14:46, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	8	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	66	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	45	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56393.02 (continued)

Sample Tag: UNKNOWN-01_GW-120423

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/06/23 14:46, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56393.03

Sample Tag: MWF15-01_GW-120423

Collected Date/Time: 12/04/2023 14:07

Matrix: Groundwater

COC Reference: 141696

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/23 11:02	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/06/23 15:06, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56393.03 (continued)

Sample Tag: MWF15-01_GW-120423

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/06/23 15:06, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56393.04

Sample Tag: MWF16-07_GW-120523

Collected Date/Time: 12/05/2023 10:45

Matrix: Groundwater

COC Reference: 141696

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/23 11:02	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/07/23 01:59, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56393.04 (continued)

Sample Tag: MWF16-07_GW-120523

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/07/23 01:59, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56393.05

Sample Tag: MWF16-07_GW-120523 MS

Collected Date/Time: 12/05/2023 10:45

Matrix: Groundwater

COC Reference: 141696

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/23 11:02	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/06/23 21:02, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	55	10		ug/L	1	60-29-7	1
Acetone	62	50		ug/L	1	67-64-1	1
Methyl iodide	54	1		ug/L	1	74-88-4	1
Carbon disulfide	52	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	55	5		ug/L	1	1634-04-4	1
Acrylonitrile	57	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	55	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	74	5		ug/L	1	75-71-8	1
Chloromethane	69	5		ug/L	1	74-87-3	1
Vinyl chloride	66	1		ug/L	1	75-01-4	1
Bromomethane	60	5		ug/L	1	74-83-9	1
Chloroethane	60	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	60	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	55	1		ug/L	1	75-35-4	1
Methylene chloride	54	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	55	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	55	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	56	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	55	1		ug/L	1	67-66-3	1
Bromochloromethane	54	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	54	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	56	50		ug/L	1	108-10-1	1
2-Hexanone	57	50		ug/L	1	591-78-6	1
Carbon tetrachloride	52	1		ug/L	1	56-23-5	1
Benzene	54	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	54	1		ug/L	1	107-06-2	1
Trichloroethene	53	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	54	1		ug/L	1	78-87-5	1
Bromodichloromethane	55	1		ug/L	1	75-27-4	1
Dibromomethane	53	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	53	1		ug/L	1	10061-01-5	1
Toluene	53	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	53	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	55	1		ug/L	1	79-00-5	1
Tetrachloroethene	52	1		ug/L	1	127-18-4	1

1-Spiked at 50 ug/L

Lab Sample ID: S56393.05 (continued)

Sample Tag: MWF16-07_GW-120523 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/06/23 21:02, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	54	1		ug/L	1	110-57-6	1
Dibromochloromethane	53	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	53	1		ug/L	1	106-93-4	1
Chlorobenzene	52	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	52	1		ug/L	1	630-20-6	1
Ethylbenzene	52	1		ug/L	1	100-41-4	1
p,m-Xylene*	104	2		ug/L	1		1
o-Xylene	52	1		ug/L	1	95-47-6	1
Styrene	53	1		ug/L	1	100-42-5	1
Isopropylbenzene	53	5		ug/L	1	98-82-8	1
Bromoform	52	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	51	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	50	1		ug/L	1	96-18-4	1
n-Propylbenzene	53	1		ug/L	1	103-65-1	1
Bromobenzene	51	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	53	1		ug/L	1	108-67-8	1
tert-Butylbenzene	52	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	53	1		ug/L	1	95-63-6	1
sec-Butylbenzene	53	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	52	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	51	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	50	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	51	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	53	1		ug/L	1	526-73-8	1
n-Butylbenzene	52	1		ug/L	1	104-51-8	1
Hexachloroethane	50	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	50	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	52	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	55	5		ug/L	1	87-61-6	1
Naphthalene	56	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	55	5		ug/L	1	91-57-6	1

1-Spiked at 50 ug/L



Analytical Laboratory Report

Lab Sample ID: S56393.06

Sample Tag: MWF16-07_GW-120523 MSD

Collected Date/Time: 12/05/2023 10:45

Matrix: Groundwater

COC Reference: 141696

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/23 11:02	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/06/23 21:21, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	52	10		ug/L	1	60-29-7	1
Acetone	62	50		ug/L	1	67-64-1	1
Methyl iodide	52	1		ug/L	1	74-88-4	1
Carbon disulfide	49	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	54	5		ug/L	1	1634-04-4	1
Acrylonitrile	57	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	56	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	70	5		ug/L	1	75-71-8	1
Chloromethane	63	5		ug/L	1	74-87-3	1
Vinyl chloride	62	1		ug/L	1	75-01-4	1
Bromomethane	56	5		ug/L	1	74-83-9	1
Chloroethane	56	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	57	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	52	1		ug/L	1	75-35-4	1
Methylene chloride	51	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	53	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	52	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	52	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	52	1		ug/L	1	67-66-3	1
Bromochloromethane	52	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	52	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	57	50		ug/L	1	108-10-1	1
2-Hexanone	56	50		ug/L	1	591-78-6	1
Carbon tetrachloride	50	1		ug/L	1	56-23-5	1
Benzene	52	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	52	1		ug/L	1	107-06-2	1
Trichloroethene	51	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	53	1		ug/L	1	78-87-5	1
Bromodichloromethane	53	1		ug/L	1	75-27-4	1
Dibromomethane	51	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	51	1		ug/L	1	10061-01-5	1
Toluene	52	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	52	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	53	1		ug/L	1	79-00-5	1
Tetrachloroethene	51	1		ug/L	1	127-18-4	1

1-Spiked at 50 ug/L



Analytical Laboratory Report

Lab Sample ID: S56393.06 (continued)

Sample Tag: MWF16-07_GW-120523 MSD

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/06/23 21:21, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	53	1		ug/L	1	110-57-6	1
Dibromochloromethane	50	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	52	1		ug/L	1	106-93-4	1
Chlorobenzene	50	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	50	1		ug/L	1	630-20-6	1
Ethylbenzene	50	1		ug/L	1	100-41-4	1
p,m-Xylene*	99	2		ug/L	1		1
o-Xylene	50	1		ug/L	1	95-47-6	1
Styrene	49	1		ug/L	1	100-42-5	1
Isopropylbenzene	51	5		ug/L	1	98-82-8	1
Bromoform	50	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	50	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	48	1		ug/L	1	96-18-4	1
n-Propylbenzene	50	1		ug/L	1	103-65-1	1
Bromobenzene	49	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	51	1		ug/L	1	108-67-8	1
tert-Butylbenzene	50	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	50	1		ug/L	1	95-63-6	1
sec-Butylbenzene	51	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	50	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	49	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	48	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	49	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	51	1		ug/L	1	526-73-8	1
n-Butylbenzene	50	1		ug/L	1	104-51-8	1
Hexachloroethane	50	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	49	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	51	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	53	5		ug/L	1	87-61-6	1
Naphthalene	54	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	53	5		ug/L	1	91-57-6	1

1-Spiked at 50 ug/L



Analytical Laboratory Report

Lab Sample ID: S56393.07

Sample Tag: TRIP BLANK

Collected Date/Time: 12/05/2023 00:01

Matrix: Water

COC Reference: 141696

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/07/23 11:02	ACK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/06/23 13:40, Analyst: NDK

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56393.07 (continued)
Sample Tag: TRIP BLANK

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/06/23 13:40, Analyst: NDK (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S56393

Client:ARCADIS_NOVI (Arcadis US, Inc. - Novi)

Project: RACER PNC

Submitted: 12/05/2023 13:00 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 3.3
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



Analytical Laboratory Report

Report ID: S56261.01(01)
Generated on 12/04/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S56261.01-S56261.04
Project: RACER PNC / 30167840.00005
Collected Date(s): 11/28/2023 - 11/29/2023
Submitted Date/Time: 11/30/2023 16:00
Sampled by: Samantha Szpaichler
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Starred (*) analytes are not NY NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

For a specific list of accredited analytes, please feel free to contact the laboratory or visit <https://www.meritlabs.com/certifications>.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699 PJLA Testing
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S56261.01	MWF16-06-GW_112823	Groundwater	11/28/23 14:50
S56261.02	MWF16-12-GW_112923	Groundwater	11/29/23 11:20
S56261.03	MWF16-18-GW_112923	Groundwater	11/29/23 12:45
S56261.04	MWF16-17-GW_112923	Groundwater	11/29/23 14:48



Analytical Laboratory Report

Lab Sample ID: S56261.01

Sample Tag: MWF16-06-GW_112823

Collected Date/Time: 11/28/2023 14:50

Matrix: Groundwater

COC Reference: 141312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 02:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	4	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	32	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	9	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	100	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	9	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	5	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	44	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56261.01 (continued)

Sample Tag: MWF16-06-GW_112823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 02:26, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56261.02

Sample Tag: MWF16-12-GW_112923

Collected Date/Time: 11/29/2023 11:20

Matrix: Groundwater

COC Reference: 141312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 02:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	9	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S56261.02 (continued)

Sample Tag: MWF16-12-GW_112923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 02:50, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56261.03

Sample Tag: MWF16-18-GW_112923

Collected Date/Time: 11/29/2023 12:45

Matrix: Groundwater

COC Reference: 141312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 07:58, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	120	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	30	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	1,040	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S56261.03 (continued)

Sample Tag: MWF16-18-GW_112923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 07:58, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S56261.04

Sample Tag: MWF16-17-GW_112923

Collected Date/Time: 11/29/2023 14:48

Matrix: Groundwater

COC Reference: 141312

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 03:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56261.04 (continued)

Sample Tag: MWF16-17-GW_112923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 03:13, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S56261

Client:ARCADIS_NOVI (Arcadis US, Inc. - Novi)

Project: RACER PNC / 30167840.00005

Submitted:11/30/2023 16:00 Login User: PFD

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.8
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Alexis Crisp			
COMPANY Arcadis			
ADDRESS 28550 Cabot Dr #500			
CITY Novi		STATE Mi	ZIP CODE 48377
PHONE NO.	FAX NO.	P.O. NO. 3067840,00005	
E-MAIL ADDRESS alexis.crisp@arcadis.com tiffany.linder@arcadis.com		QUOTE NO.	

CONTACT NAME Accounts Payable		☐ SAME	
COMPANY Aradis			
ADDRESS 630 Plaza Dr #600			
CITY Highlands Ranch		STATE CO	ZIP CODE 80129
PHONE NO.	E-MAIL ADDRESS accounts.payable.administration@aradis.com		
ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)			

PROJECT NO./NAME Pacer ENC / 30167840.00005	SAMPLER(S), PLEASE PRINT/SIGN NAME Samantha Szpachler / [Signature]
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER	
DELIVERABLES REQUIRED ☒ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER	

MATRIX	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
CODE:	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR
					W=WASTE

Containers & Preservatives[illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Summer Guy</i>	☒ Sampler	DATE 11/29/23	TIME 1520
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>Summer Guy / Summer Guy</i>		DATE 11/29/23	TIME 1520
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Summer Guy</i>		DATE 11/30/23	TIME 16:00
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>Summer Guy</i>		DATE 11/30/23	TIME 18:00

RELINQUISHED BY:		<i>Summer Sky / Arcades</i>		DATE	TIME
SIGNATURE/ORGANIZATION				<i>11/30/23</i>	<i>10:30</i>
RECEIVED BY:		<i>By [Signature]</i>		DATE	TIME
SIGNATURE/ORGANIZATION				<i>11/30/23</i>	<i>10:30</i>
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL _____	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		<i>2, 8.</i>	

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S56262.01(01)
Generated on 12/05/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

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2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S56262.01-S56262.06
Project: 30167840.00005 / RACER PNC
Collected Date(s): 11/28/2023 - 11/30/2023
Submitted Date/Time: 11/30/2023 16:00
Sampled by: Sommer Guy
P.O. #: 30167840.00005

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Starred (*) analytes are not NY NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

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Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

For a specific list of accredited analytes, please feel free to contact the laboratory or visit <https://www.meritlabs.com/certifications>.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699 PJLA Testing
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S56262.01	MWF16-22_GW_112823	Groundwater	11/28/23 12:42
S56262.02	trip blank	Liquid	11/28/23 00:01
S56262.03	MWF16-25_GW_112923	Groundwater	11/29/23 14:35
S56262.04	MWOS-08_GW_112923	Groundwater	11/29/23 15:23
S56262.05	MWOS-09R_GW_113023	Groundwater	11/30/23 10:23
S56262.06	DUP-03_GW_113023	Groundwater	11/30/23 00:01



Analytical Laboratory Report

Lab Sample ID: S56262.01

Sample Tag: MWF16-22_GW_112823

Collected Date/Time: 11/28/2023 12:42

Matrix: Groundwater

COC Reference: 141317

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 03:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	54	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	1	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	1	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	13	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	285	1		ug/L	1	127-18-4	E

E-Concentration exceeds calibration range



Analytical Laboratory Report

Lab Sample ID: S56262.01 (continued)

Sample Tag: MWF16-22_GW_112823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 03:37, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 12/05/23 02:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S56262.01 (continued)

Sample Tag: MW16-22_GW_112823

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 12/05/23 02:16, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	50	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	10	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	210	10		ug/L	10	127-18-4	Y
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S56262.01 (continued)
Sample Tag: MWF16-22_GW_112823

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 12/05/23 02:16, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S56262.02

Sample Tag: trip blank

Collected Date/Time: 11/28/2023 00:01

Matrix: Liquid

COC Reference: 141317

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 01:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56262.02 (continued)

Sample Tag: trip blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 01:16, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56262.03

Sample Tag: MWF16-25_GW_112923

Collected Date/Time: 11/29/2023 14:35

Matrix: Groundwater

COC Reference: 141317

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 04:00, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	4	1		ug/L	1	156-60-5	
1,1-Dichloroethane	3	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	41	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	3	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	1	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56262.03 (continued)

Sample Tag: MWF16-25_GW_112923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 04:00, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56262.04

Sample Tag: MWOS-08_GW_112923

Collected Date/Time: 11/29/2023 15:23

Matrix: Groundwater

COC Reference: 141317

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 04:24, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	1	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	1	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	6	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56262.04 (continued)

Sample Tag: MWOS-08_GW_112923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 04:24, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56262.05

Sample Tag: MWOS-09R_GW_113023

Collected Date/Time: 11/30/2023 10:23

Matrix: Groundwater

COC Reference: 141317

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 04:48, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	22	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	5	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	14	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56262.05 (continued)

Sample Tag: MWOS-09R_GW_113023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 04:48, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56262.06

Sample Tag: DUP-03_GW_113023

Collected Date/Time: 11/30/2023 00:01

Matrix: Groundwater

COC Reference: 141317

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 05:12, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	21	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	5	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	15	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56262.06 (continued)

Sample Tag: DUP-03_GW_113023

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 05:12, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S56262

Client:ARCADIS_NOVI (Arcadis US, Inc. - Novi)

Project: 30167840.00005 / RACER PNC

Submitted: 11/30/2023 16:00 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909

FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01. ☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C	Thermometer # IR 2.8
02. ☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun	
03. ☐ Yes ☒ No ☐ N/A	Samples shipped	
04. ☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box	
05. ☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody		
06. ☒ Yes ☐ No ☐ N/A	COC adequately filled out	
07. ☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab	
08. ☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC	
09. ☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:	
Preservation		
10. ☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation	
11. ☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)	
12. ☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions		
13. ☒ Yes ☐ No ☐ N/A	All bottles intact	
14. ☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used	
15. ☒ Yes ☐ No ☐ N/A	Merit bottles used	
16. ☒ Yes ☐ No ☐ N/A	Sufficient sample volume received	
17. ☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration	
18. ☒ Yes ☐ No ☐ N/A	Samples submitted within holding time	
19. ☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CONTACT NAME			
Alexis Crisp			
COMPANY			
Arcades			
ADDRESS			
28550 Cabot Dr #500			
CITY			STATE
Novi			MI
PHONE NO.			ZIP CODE
			48317
FAX NO.		P.O. NO.	
E-MAIL ADDRESS		QUOTE NO.	
Alexis.Crisp@arcades.com tiffany.binder@arcades.com			

CHAIN OF CUSTODY RECORD

CONTACT NAME		Accounts Payable		☐ SAME	
COMPANY		Arcadis			
ADDRESS		630 Plaza Dr #600			
CITY		Highlands Ranch		STATE	ZIP CODE
				CO	80129
PHONE NO.		E-MAIL ADDRESS			
		accounts payable.administration@arcadis.com			

INVOICE TO

PROJECT NO./NAME	30167840.00005	Racer PNC	SAMPLER(S) - PLEASE PRINT/SIGN NAME	Sommer Guy	Sommer Guy
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER					
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ EDD ☐ OTHER					

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications

☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York
☐ Other _____

Special Instructions

MATRIX	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
CODE:	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR W=WASTE

Containers & Preservatives

[illegible]

RELINQUISHED BY:	<i>Samuel Day</i>	DATE	TIME
SIGNATURE/ORGANIZATION		11/30/23	16:00
RECEIVED BY:	<i>Sam A. Miller</i>	DATE	TIME
SIGNATURE/ORGANIZATION		11/30/23	16:00
RELINQUISHED BY:	<i>Sam Miller</i>	DATE	TIME
SIGNATURE/ORGANIZATION		11/30/23	16:00
RECEIVED BY:	<i>[Signature]</i>	DATE	TIME
SIGNATURE/ORGANIZATION		11/30/23	16:00

RELINQUISHED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL _____ 2.8
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S56263.01(01)
Generated on 12/06/2023

Report to

Attention: Alexis Crisp
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:
Email: Alexis.Crisp@arcadis.com

Additional Contacts: Tiffany Linder, Ian Drost

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S56263.01-S56263.08
Project: 30167840.00005 / RACER PNC
Collected Date(s): 11/28/2023 - 11/29/2023
Submitted Date/Time: 11/30/2023 16:00
Sampled by: Sommer Guy
P.O. #: 30167840.00005

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Starred (*) analytes are not NY NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

For a specific list of accredited analytes, please feel free to contact the laboratory or visit <https://www.meritlabs.com/certifications>.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699 PJLA Testing
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S56263.01	MWF16-16_GW_112823	Groundwater	11/28/23 13:57
S56263.02	MW-16-22_GW_112923	Groundwater	11/29/23 10:40
S56263.03	MW-15-22_GW_112923	Groundwater	11/29/23 11:30
S56263.04	MW-14-22_GW_112923	Groundwater	11/29/23 12:45
S56263.05	MW-14-22_GW_112923 MS	Groundwater	11/29/23 12:45
S56263.06	MW-14-22_GW_112923 MSD	Groundwater	11/29/23 12:45
S56263.07	MW-13-22_GW_112923	Groundwater	11/29/23 13:40
S56263.08	DUP-02_GW_112923	Groundwater	11/29/23 00:01



Analytical Laboratory Report

Lab Sample ID: S56263.01

Sample Tag: MWF16-16_GW_112823

Collected Date/Time: 11/28/2023 13:57

Matrix: Groundwater

COC Reference: 141316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 08:22, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	20	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	Not detected	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	440	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S56263.01 (continued)

Sample Tag: MWF16-16_GW_112823

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 08:22, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S56263.02

Sample Tag: MW-16-22_GW_112923

Collected Date/Time: 11/29/2023 10:40

Matrix: Groundwater

COC Reference: 141316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 18:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	8	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	3	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	94	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56263.02 (continued)

Sample Tag: MW-16-22_GW_112923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/04/23 18:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56263.03

Sample Tag: MW-15-22_GW_112923

Collected Date/Time: 11/29/2023 11:30

Matrix: Groundwater

COC Reference: 141316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 05:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56263.03 (continued)

Sample Tag: MW-15-22_GW_112923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 05:35, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56263.04

Sample Tag: MW-14-22_GW_112923

Collected Date/Time: 11/29/2023 12:45

Matrix: Groundwater

COC Reference: 141316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/06/23 10:25	NDK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/05/23 17:31, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	30	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	10	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	180	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S56263.04 (continued)

Sample Tag: MW-14-22_GW_112923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/05/23 17:31, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	140	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S56263.05

Sample Tag: MW-14-22_GW_112923 MS

Collected Date/Time: 11/29/2023 12:45

Matrix: Groundwater

COC Reference: 141316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/06/23 10:25	NDK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/05/23 21:48, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	490	100		ug/L	10	60-29-7	Y1
Acetone	520	500		ug/L	10	67-64-1	Y1
Methyl iodide	500	10		ug/L	10	74-88-4	Y1
Carbon disulfide	460	50		ug/L	10	75-15-0	Y1
tert-Methyl butyl ether (MTBE)	510	50		ug/L	10	1634-04-4	Y1
Acrylonitrile	530	20		ug/L	10	107-13-1	Y1
2-Butanone (MEK)	520	250		ug/L	10	78-93-3	Y1
Dichlorodifluoromethane	700	50		ug/L	10	75-71-8	Y1
Chloromethane	590	50		ug/L	10	74-87-3	Y1
Vinyl chloride	580	10		ug/L	10	75-01-4	Y1
Bromomethane	560	50		ug/L	10	74-83-9	Y1
Chloroethane	560	50		ug/L	10	75-00-3	Y1
Trichlorofluoromethane	550	10		ug/L	10	75-69-4	Y1
1,1-Dichloroethene	500	10		ug/L	10	75-35-4	Y1
Methylene chloride	490	50		ug/L	10	75-09-2	Y1
trans-1,2-Dichloroethene	500	10		ug/L	10	156-60-5	Y1
1,1-Dichloroethane	500	10		ug/L	10	75-34-3	Y1
cis-1,2-Dichloroethene	530	10		ug/L	10	156-59-2	Y1
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y1
Chloroform	490	10		ug/L	10	67-66-3	Y1
Bromochloromethane	480	10		ug/L	10	74-97-5	Y1
1,1,1-Trichloroethane	500	10		ug/L	10	71-55-6	Y1
4-Methyl-2-pentanone (MIBK)	510	500		ug/L	10	108-10-1	Y1
2-Hexanone	520	500		ug/L	10	591-78-6	Y1
Carbon tetrachloride	460	10		ug/L	10	56-23-5	Y1
Benzene	480	10		ug/L	10	71-43-2	Y1
1,2-Dichloroethane	480	10		ug/L	10	107-06-2	Y1
Trichloroethene	490	10		ug/L	10	79-01-6	Y1
1,2-Dichloropropane	490	10		ug/L	10	78-87-5	Y1
Bromodichloromethane	490	10		ug/L	10	75-27-4	Y1
Dibromomethane	470	50		ug/L	10	74-95-3	Y1
cis-1,3-Dichloropropene	470	10		ug/L	10	10061-01-5	Y1
Toluene	480	10		ug/L	10	108-88-3	Y1
trans-1,3-Dichloropropene	480	10		ug/L	10	10061-02-6	Y1
1,1,2-Trichloroethane	490	10		ug/L	10	79-00-5	Y1
Tetrachloroethene	640	10		ug/L	10	127-18-4	Y1

Y-Elevated reporting limit due to high target concentration 1-Spiked at 500ug/L

Lab Sample ID: S56263.05 (continued)

Sample Tag: MW-14-22_GW_112923 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/05/23 21:48, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	510	10		ug/L	10	110-57-6	Y1
Dibromochloromethane	470	50		ug/L	10	124-48-1	Y1
1,2-Dibromoethane	480	10		ug/L	10	106-93-4	Y1
Chlorobenzene	470	10		ug/L	10	108-90-7	Y1
1,1,1,2-Tetrachloroethane	480	10		ug/L	10	630-20-6	Y1
Ethylbenzene	480	10		ug/L	10	100-41-4	Y1
p,m-Xylene*	960	20		ug/L	10		Y1
o-Xylene	480	10		ug/L	10	95-47-6	Y1
Styrene	480	10		ug/L	10	100-42-5	Y1
Isopropylbenzene	480	50		ug/L	10	98-82-8	Y1
Bromoform	470	10		ug/L	10	75-25-2	Y1
1,1,2,2-Tetrachloroethane	480	10		ug/L	10	79-34-5	Y1
1,2,3-Trichloropropane	470	10		ug/L	10	96-18-4	Y1
n-Propylbenzene	480	10		ug/L	10	103-65-1	Y1
Bromobenzene	480	10		ug/L	10	108-86-1	Y1
1,3,5-Trimethylbenzene	480	10		ug/L	10	108-67-8	Y1
tert-Butylbenzene	480	10		ug/L	10	98-06-6	Y1
1,2,4-Trimethylbenzene	490	10		ug/L	10	95-63-6	Y1
sec-Butylbenzene	510	10		ug/L	10	135-98-8	Y1
p-Isopropyltoluene	500	50		ug/L	10	99-87-6	Y1
1,3-Dichlorobenzene	490	10		ug/L	10	541-73-1	Y1
1,4-Dichlorobenzene	490	10		ug/L	10	106-46-7	Y1
1,2-Dichlorobenzene	490	10		ug/L	10	95-50-1	Y1
1,2,3-Trimethylbenzene	510	10		ug/L	10	526-73-8	Y1
n-Butylbenzene	500	10		ug/L	10	104-51-8	Y1
Hexachloroethane	490	50		ug/L	10	67-72-1	Y1
1,2-Dibromo-3-chloropropane	500	50		ug/L	10	96-12-8	Y1
1,2,4-Trichlorobenzene	500	50		ug/L	10	120-82-1	Y1
1,2,3-Trichlorobenzene	520	50		ug/L	10	87-61-6	Y1
Naphthalene	540	50		ug/L	10	91-20-3	Y1
2-Methylnaphthalene	540	50		ug/L	10	91-57-6	Y1

Y-Elevated reporting limit due to high target concentration 1-Spiked at 500ug/L



Analytical Laboratory Report

Lab Sample ID: S56263.06

Sample Tag: MW-14-22_GW_112923 MSD

Collected Date/Time: 11/29/2023 12:45

Matrix: Groundwater

COC Reference: 141316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/06/23 10:25	NDK	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/05/23 22:07, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	490	100		ug/L	10	60-29-7	Y1
Acetone	510	500		ug/L	10	67-64-1	Y1
Methyl iodide	480	10		ug/L	10	74-88-4	Y1
Carbon disulfide	440	50		ug/L	10	75-15-0	Y1
tert-Methyl butyl ether (MTBE)	510	50		ug/L	10	1634-04-4	Y1
Acrylonitrile	510	20		ug/L	10	107-13-1	Y1
2-Butanone (MEK)	500	250		ug/L	10	78-93-3	Y1
Dichlorodifluoromethane	650	50		ug/L	10	75-71-8	Y1
Chloromethane	570	50		ug/L	10	74-87-3	Y1
Vinyl chloride	550	10		ug/L	10	75-01-4	Y1
Bromomethane	540	50		ug/L	10	74-83-9	Y1
Chloroethane	530	50		ug/L	10	75-00-3	Y1
Trichlorofluoromethane	540	10		ug/L	10	75-69-4	Y1
1,1-Dichloroethene	470	10		ug/L	10	75-35-4	Y1
Methylene chloride	470	50		ug/L	10	75-09-2	Y1
trans-1,2-Dichloroethene	490	10		ug/L	10	156-60-5	Y1
1,1-Dichloroethane	490	10		ug/L	10	75-34-3	Y1
cis-1,2-Dichloroethene	510	10		ug/L	10	156-59-2	Y1
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y1
Chloroform	480	10		ug/L	10	67-66-3	Y1
Bromochloromethane	480	10		ug/L	10	74-97-5	Y1
1,1,1-Trichloroethane	480	10		ug/L	10	71-55-6	Y1
4-Methyl-2-pentanone (MIBK)	510	500		ug/L	10	108-10-1	Y1
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y1
Carbon tetrachloride	460	10		ug/L	10	56-23-5	Y1
Benzene	470	10		ug/L	10	71-43-2	Y1
1,2-Dichloroethane	480	10		ug/L	10	107-06-2	Y1
Trichloroethene	480	10		ug/L	10	79-01-6	Y1
1,2-Dichloropropane	480	10		ug/L	10	78-87-5	Y1
Bromodichloromethane	490	10		ug/L	10	75-27-4	Y1
Dibromomethane	470	50		ug/L	10	74-95-3	Y1
cis-1,3-Dichloropropene	480	10		ug/L	10	10061-01-5	Y1
Toluene	470	10		ug/L	10	108-88-3	Y1
trans-1,3-Dichloropropene	480	10		ug/L	10	10061-02-6	Y1
1,1,2-Trichloroethane	480	10		ug/L	10	79-00-5	Y1
Tetrachloroethene	640	10		ug/L	10	127-18-4	Y1

Y-Elevated reporting limit due to high target concentration 1-Spiked at 500ug/L



Analytical Laboratory Report

Lab Sample ID: S56263.06 (continued)

Sample Tag: MW-14-22_GW_112923 MSD

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/05/23 22:07, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	500	10		ug/L	10	110-57-6	Y1
Dibromochloromethane	470	50		ug/L	10	124-48-1	Y1
1,2-Dibromoethane	480	10		ug/L	10	106-93-4	Y1
Chlorobenzene	470	10		ug/L	10	108-90-7	Y1
1,1,1,2-Tetrachloroethane	480	10		ug/L	10	630-20-6	Y1
Ethylbenzene	470	10		ug/L	10	100-41-4	Y1
p,m-Xylene*	940	20		ug/L	10		Y1
o-Xylene	470	10		ug/L	10	95-47-6	Y1
Styrene	480	10		ug/L	10	100-42-5	Y1
Isopropylbenzene	480	50		ug/L	10	98-82-8	Y1
Bromoform	470	10		ug/L	10	75-25-2	Y1
1,1,2,2-Tetrachloroethane	470	10		ug/L	10	79-34-5	Y1
1,2,3-Trichloropropane	460	10		ug/L	10	96-18-4	Y1
n-Propylbenzene	480	10		ug/L	10	103-65-1	Y1
Bromobenzene	470	10		ug/L	10	108-86-1	Y1
1,3,5-Trimethylbenzene	490	10		ug/L	10	108-67-8	Y1
tert-Butylbenzene	470	10		ug/L	10	98-06-6	Y1
1,2,4-Trimethylbenzene	490	10		ug/L	10	95-63-6	Y1
sec-Butylbenzene	490	10		ug/L	10	135-98-8	Y1
p-Isopropyltoluene	480	50		ug/L	10	99-87-6	Y1
1,3-Dichlorobenzene	470	10		ug/L	10	541-73-1	Y1
1,4-Dichlorobenzene	460	10		ug/L	10	106-46-7	Y1
1,2-Dichlorobenzene	470	10		ug/L	10	95-50-1	Y1
1,2,3-Trimethylbenzene	500	10		ug/L	10	526-73-8	Y1
n-Butylbenzene	480	10		ug/L	10	104-51-8	Y1
Hexachloroethane	470	50		ug/L	10	67-72-1	Y1
1,2-Dibromo-3-chloropropane	480	50		ug/L	10	96-12-8	Y1
1,2,4-Trichlorobenzene	490	50		ug/L	10	120-82-1	Y1
1,2,3-Trichlorobenzene	510	50		ug/L	10	87-61-6	Y1
Naphthalene	510	50		ug/L	10	91-20-3	Y1
2-Methylnaphthalene	510	50		ug/L	10	91-57-6	Y1

Y-Elevated reporting limit due to high target concentration 1-Spiked at 500ug/L



Analytical Laboratory Report

Lab Sample ID: S56263.07

Sample Tag: MW-13-22_GW_112923

Collected Date/Time: 11/29/2023 13:40

Matrix: Groundwater

COC Reference: 141316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 05:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56263.07 (continued)

Sample Tag: MW-13-22_GW_112923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 05:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S56263.08

Sample Tag: DUP-02_GW_112923

Collected Date/Time: 11/29/2023 00:01

Matrix: Groundwater

COC Reference: 141316

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/04/23 13:05	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 06:23, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S56263.08 (continued)

Sample Tag: DUP-02_GW_112923

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/02/23 06:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S56263

Client:ARCADIS_NOVI (Arcadis US, Inc. - Novi)

Project: 30167840.00005 / RACER PNC

Submitted: 11/30/2023 16:00 Login User: MMC

Attention: Alexis Crisp

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1909 FAX:

Email: Alexis.Crisp@arcadis.com

Selection	Description	Note
Sample Receiving		
01. ☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.8
02. ☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun	
03. ☐ Yes ☒ No ☐ N/A	Samples shipped	
04. ☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box	
05. ☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody		
06. ☒ Yes ☐ No ☐ N/A	COC adequately filled out	
07. ☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab	
08. ☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC	
09. ☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:	
Preservation		
10. ☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation	
11. ☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)	
12. ☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions		
13. ☒ Yes ☐ No ☐ N/A	All bottles intact	
14. ☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used	
15. ☒ Yes ☐ No ☐ N/A	Merit bottles used	
16. ☒ Yes ☐ No ☐ N/A	Sufficient sample volume received	
17. ☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration	
18. ☒ Yes ☐ No ☐ N/A	Samples submitted within holding time	
19. ☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME				Alexis Crisp			
COMPANY				Arcadis			
ADDRESS							
28550 Cabot Dr #500							
CITY				STATE		ZIP CODE	
NOVI				MI		48377	
PHONE NO.			FAX NO.			P.O. NO.	
E-MAIL ADDRESS						QUOTE NO.	
tiffany.linder@arcadis.com Alexis.Crisp@arcadis.com							

CONTACT NAME		Accounts Payable		☐ SAME	
COMPANY		Arcadis			
ADDRESS		285F 630 Plaza Dr #600			
CITY		Highlands Ranch		STATE ZIP CODE	
PHONE NO.		CO 80129			
E-MAIL ADDRESS		accounts.payable.administration@arcadis.com			

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME 30167840.00005/Racer PNC	SAMPLER(S) - PLEASE PRINT/SIGN NAME Sommer Guy / Sommer Guy
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER	

MATRIX	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
CODE:	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WPIE	A=AIR
					W=WASTE

Containers & Preservatives

[illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Summer Day</i>	☒ Sampler	DATE 11/30/23	TIME 10:42
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 11/30/23	TIME 10:30
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 11/30/23	TIME 16:00
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>		DATE 11/30/23	TIME 16:00

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL _____ 2.8	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



12/6/2023

Ms. Lexi Crisp
Arcadis U.S., Inc.
7575 Huntington Park Drive
Suite 130
Columbus OH 43235

Project Name: Racer PNC
Project #: 30167840.00004
Workorder #: 2311638

Dear Ms. Lexi Crisp

The following report includes the data for the above referenced project for sample(s) received on 11/30/2023 at Eurofins Air Toxics LLC.

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

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

Regards,



Jade White
Project Manager

WORK ORDER #: 2311638

Work Order Summary

CLIENT: Ms. Lexi Crisp
Arcadis U.S., Inc.
7575 Huntington Park Drive
Suite 130
Columbus, OH 43235

BILL TO: Accounts Payable
Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

PHONE:

FAX:

DATE RECEIVED: 11/30/2023

DATE COMPLETED: 12/05/2023

P.O. # 30167840.00004

PROJECT # 30167840.00004 Racer PNC

CONTACT: Jade White

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SV-02-21_SG-112723	TO-15	4.1 "Hg	10 psi
02A	SV-01-21_SG-112723	TO-15	5.3 "Hg	9.9 psi
03A	SV-06-21_SG-112723	TO-15	4.3 "Hg	9.9 psi
04A	SV-05-21_SG-112723	TO-15	4.1 "Hg	10 psi
05A	SV-04-21_SG-112723	TO-15	4.5 "Hg	10 psi
06A	SV-03-21_SG-112723	TO-15	4.3 "Hg	10 psi
07A	DUP-01_SG-112723	TO-15	3.9 "Hg	10 psi
08A	Lab Blank	TO-15	NA	NA
08B	Lab Blank	TO-15	NA	NA
09A	CCV	TO-15	NA	NA
09B	CCV	TO-15	NA	NA
10A	LCS	TO-15	NA	NA
10AA	LCSD	TO-15	NA	NA
10B	LCS	TO-15	NA	NA
10BB	LCSD	TO-15	NA	NA

CERTIFIED BY:



Technical Director

DATE: 12/06/23

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP – 209222, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP – T104704434-22-18, UT NELAP – CA009332022-14, VA NELAP - 12240, WA ELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) CA300005-017

Eurofins Environment Testing Northern California, LLC certifies that the test results contained in this report meet all requirements of the 2016 TNI Standard.

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000

LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2311638

Seven 1 Liter Summa Canister samples were received on November 30, 2023. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

The Chain of Custody (COC) information for sample SV-03-21_SG-112723 did not match the information on the canister with regard to canister barcode. The sample labeled C349 on the COC is labeled as LC349 on the canister. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

N - The identification is based on presumptive evidence.

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

CN - See Case Narrative.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client Sample ID: SV-02-21_SG-112723

Lab ID#: 2311638-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.98	9.3	5.2	50
Tetrachloroethene	0.98	1.2	6.6	8.3

Client Sample ID: SV-01-21_SG-112723

Lab ID#: 2311638-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	3.0	5.4	16
Tetrachloroethene	1.0	1.4	6.9	9.7

Client Sample ID: SV-06-21_SG-112723

Lab ID#: 2311638-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.98	3.1	5.2	17

Client Sample ID: SV-05-21_SG-112723

Lab ID#: 2311638-04A

No Detections Were Found.

Client Sample ID: SV-04-21_SG-112723

Lab ID#: 2311638-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.99	3.0	5.3	16

Client Sample ID: SV-03-21_SG-112723

Lab ID#: 2311638-06A

No Detections Were Found.

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

Client Sample ID: DUP-01_SG-112723

Lab ID#: 2311638-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.96	9.5	5.2	51
Tetrachloroethene	0.96	1.2	6.5	8.1

Client Sample ID: SV-02-21_SG-112723

Lab ID#: 2311638-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120121	Date of Collection: 11/27/23 11:44:00 A
Dil. Factor:	1.95	Date of Analysis: 12/2/23 01:58 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.98	Not Detected	2.5	Not Detected
1,1-Dichloroethene	0.98	Not Detected	3.9	Not Detected
cis-1,2-Dichloroethene	0.98	Not Detected	3.9	Not Detected
Trichloroethene	0.98	9.3	5.2	50
trans-1,2-Dichloroethene	0.98	Not Detected	3.9	Not Detected
Tetrachloroethene	0.98	1.2	6.6	8.3

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	83	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: SV-01-21_SG-112723

Lab ID#: 2311638-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120122	Date of Collection:	11/27/23 12:03:00 P
Dil. Factor:	2.03	Date of Analysis:	12/2/23 02:35 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.0	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Trichloroethene	1.0	3.0	5.4	16
trans-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Tetrachloroethene	1.0	1.4	6.9	9.7

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	83	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: SV-06-21_SG-112723

Lab ID#: 2311638-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120123	Date of Collection: 11/27/23 12:35:00 P
Dil. Factor:	1.95	Date of Analysis: 12/2/23 03:11 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.98	Not Detected	2.5	Not Detected
1,1-Dichloroethene	0.98	Not Detected	3.9	Not Detected
cis-1,2-Dichloroethene	0.98	Not Detected	3.9	Not Detected
Trichloroethene	0.98	3.1	5.2	17
trans-1,2-Dichloroethene	0.98	Not Detected	3.9	Not Detected
Tetrachloroethene	0.98	Not Detected	6.6	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	84	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: SV-05-21_SG-112723

Lab ID#: 2311638-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120124	Date of Collection: 11/27/23 12:52:00 P
Dil. Factor:	1.95	Date of Analysis: 12/2/23 03:48 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.98	Not Detected	2.5	Not Detected
1,1-Dichloroethene	0.98	Not Detected	3.9	Not Detected
cis-1,2-Dichloroethene	0.98	Not Detected	3.9	Not Detected
Trichloroethene	0.98	Not Detected	5.2	Not Detected
trans-1,2-Dichloroethene	0.98	Not Detected	3.9	Not Detected
Tetrachloroethene	0.98	Not Detected	6.6	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	84	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: SV-04-21_SG-112723

Lab ID#: 2311638-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120125	Date of Collection: 11/27/23 1:28:00 PM
Dil. Factor:	1.98	Date of Analysis: 12/2/23 04:25 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.99	Not Detected	2.5	Not Detected
1,1-Dichloroethene	0.99	Not Detected	3.9	Not Detected
cis-1,2-Dichloroethene	0.99	Not Detected	3.9	Not Detected
Trichloroethene	0.99	3.0	5.3	16
trans-1,2-Dichloroethene	0.99	Not Detected	3.9	Not Detected
Tetrachloroethene	0.99	Not Detected	6.7	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	84	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: SV-03-21_SG-112723

Lab ID#: 2311638-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120409	Date of Collection: 11/27/23 1:41:00 PM
Dil. Factor:	1.96	Date of Analysis: 12/4/23 03:53 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.98	Not Detected	2.5	Not Detected
1,1-Dichloroethene	0.98	Not Detected	3.9	Not Detected
cis-1,2-Dichloroethene	0.98	Not Detected	3.9	Not Detected
Trichloroethene	0.98	Not Detected	5.3	Not Detected
trans-1,2-Dichloroethene	0.98	Not Detected	3.9	Not Detected
Tetrachloroethene	0.98	Not Detected	6.6	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	84	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: DUP-01_SG-112723

Lab ID#: 2311638-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120410	Date of Collection:	11/27/23
Dil. Factor:	1.93	Date of Analysis:	12/4/23 04:30 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.96	Not Detected	2.5	Not Detected
1,1-Dichloroethene	0.96	Not Detected	3.8	Not Detected
cis-1,2-Dichloroethene	0.96	Not Detected	3.8	Not Detected
Trichloroethene	0.96	9.5	5.2	51
trans-1,2-Dichloroethene	0.96	Not Detected	3.8	Not Detected
Tetrachloroethene	0.96	1.2	6.5	8.1

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	85	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: Lab Blank

Lab ID#: 2311638-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120113e	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/1/23 08:03 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	85	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: Lab Blank

Lab ID#: 2311638-08B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120406d	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/4/23 11:22 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	83	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: CCV

Lab ID#: 2311638-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: a120110

Date of Collection: NA

Dil. Factor: 1.00

Date of Analysis: 12/1/23 06:16 PM

Compound	%Recovery
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Vinyl Chloride	87
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1,1-Dichloroethene	95
--------------------	----

cis-1,2-Dichloroethene	94
------------------------	----

Trichloroethene	96
-----------------	----

trans-1,2-Dichloroethene	94
--------------------------	----

Tetrachloroethene	101
-------------------	-----

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
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Toluene-d8	99	70-130
------------	----	--------

1,2-Dichloroethane-d4	84	70-130
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4-Bromofluorobenzene	107	70-130
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Air Toxics

Client Sample ID: CCV

Lab ID#: 2311638-09B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120403	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/4/23 09:36 AM

Compound	%Recovery
----------	-----------

Vinyl Chloride	88
1,1-Dichloroethene	97
cis-1,2-Dichloroethene	93
Trichloroethene	97
trans-1,2-Dichloroethene	95
Tetrachloroethene	101

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	85	70-130
4-Bromofluorobenzene	106	70-130

Client Sample ID: LCS

Lab ID#: 2311638-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120111	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/1/23 06:51 PM

Compound	%Recovery	Method Limits
Vinyl Chloride	84	70-130
1,1-Dichloroethene	90	70-130
cis-1,2-Dichloroethene	90	70-130
Trichloroethene	95	70-130
trans-1,2-Dichloroethene	91	70-130
Tetrachloroethene	99	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	83	70-130
4-Bromofluorobenzene	107	70-130

Client Sample ID: LCSD

Lab ID#: 2311638-10AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120112	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/1/23 07:26 PM

Compound	%Recovery	Method Limits
Vinyl Chloride	84	70-130
1,1-Dichloroethene	90	70-130
cis-1,2-Dichloroethene	90	70-130
Trichloroethene	95	70-130
trans-1,2-Dichloroethene	89	70-130
Tetrachloroethene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	84	70-130
4-Bromofluorobenzene	106	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 2311638-10B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120404	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/4/23 10:11 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	86	70-130
1,1-Dichloroethene	90	70-130
cis-1,2-Dichloroethene	92	70-130
Trichloroethene	95	70-130
trans-1,2-Dichloroethene	91	70-130
Tetrachloroethene	99	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	86	70-130
4-Bromofluorobenzene	106	70-130

Client Sample ID: LCSD

Lab ID#: 2311638-10BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a120405	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/4/23 10:46 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	85	70-130
1,1-Dichloroethene	91	70-130
cis-1,2-Dichloroethene	90	70-130
Trichloroethene	94	70-130
trans-1,2-Dichloroethene	91	70-130
Tetrachloroethene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	84	70-130
4-Bromofluorobenzene	106	70-130

Appendix B

Groundwater and Soil Vapor Sampling Logs

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-06-20	Date	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	37.0 degrees F and Clear. NE 12 mph	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.82	Total Depth (ft-bmp)	29.21	Water Column (ft)	2.39
Purge Start	14:22	Pump Intake (ft-bmp)	28	Purge Method	Low-Flow
Purge End		Volumes Purged	6.41	Sample ID	MW-06-20_GW-030723
Sample Time	14:58	Gallons Purged	2.50	Replicate/ Code No.	DUP-01
				Well Casing Material	PVC
				Gallons in Well	0.39
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:24	0	0	150	26.85	--	7.44	0.864	3.59	9.19	13.4	29.7	--	--
14:29	5	5	150	26.85	--	7.24	0.842	1.51	7.93	13.6	28.3	--	--
14:34	5	10	150	26.85	--	7.26	0.799	1.51	7.51	13.5	30.3	--	--
14:39	5	15	150	26.85	--	7.27	0.792	1.24	7.29	13.7	32.6	--	--
14:44	5	20	150	26.85	--	7.27	0.783	1.46	7.08	13.7	34.9	--	--
14:49	5	25	150	26.85	--	7.27	0.778	0.94	6.83	13.6	37.7	--	--
14:54	5	30	150	26.85	--	7.27	0.774	1.42	6.58	13.6	39.6	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: South Fiero	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-08-21	Date	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	36.0 degrees F and Clear. The wind is blowing N/NE at 17.2 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	27.60	Total Depth (ft-bmp)	30.29	Water Column (ft)	2.69
Purge Start	13:08	Pump Intake (ft-bmp)	28.5	Purge Method	Low-Flow
Purge End	13:57	Volumes Purged	5.68	Sample ID	MW-08-21_GW-030723
Sample Time	13:55	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.44
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:10	0	0	150	27.62	--	7.68	0.803	3.71	2.26	13.4	0.807	--	--
13:15	5	5	150	27.62	--	7.38	0.757	1.55	1.46	13.7	0.3	--	--
13:20	5	10	150	27.62	--	7.39	0.748	1.85	1.84	13.6	0.7	--	--
13:25	5	15	150	27.62	--	7.39	0.742	1.97	1.66	13.5	4.2	--	--
13:30	5	20	150	27.62	--	7.39	0.744	1.57	1.62	13.3	7.3	--	--
13:35	5	25	150	27.62	--	7.39	0.74	1.22	1.29	13.4	10.9	--	--
13:40	5	30	150	27.62	--	7.39	0.739	1.5	1.14	13.4	13.6	--	--
13:45	5	35	150	27.62	--	7.39	0.742	1.33	1.09	13.4	15.9	--	--
13:50	5	40	150	27.62	--	7.39	0.742	1.67	1.04	13.4	18.5	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: South Fiero	Well Locked at Arrival:
Condition of Well: Good condition,Missing bolts	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-09-22	Date	03/06/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	36.0 degrees F and Cloudy. The wind is blowing E at 13.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.84	Total Depth (ft-bmp)	32.82	Water Column (ft)	10.98
Purge Start	13:09	Pump Intake (ft-bmp)	27.32	Purge Method	Low-Flow
Purge End	13:51	Volumes Purged	0.82	Sample ID	MW-09-22_GW-030623
Sample Time	13:18	Gallons Purged	1.47	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.78
				Purge Equipment	Peristaltic
				Sampled by	Leticia Ferreira
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:10	0	0	300	21.84	--	6.92	0.582	4.6	1.51	11.1	195.6	--	--
13:15	5	5	150	21.84	--	6.86	0.002	3.73	11.5	10	153.3	--	--
13:20	5	10	150	21.84	--	7.31	0.006	3.59	10.2	11.5	187.6	--	--
13:25	5	15	150	21.84	--	6.98	0.621	3.97	0.54	11.7	185.7	--	--
13:30	5	20	150	21.84	--	7.12	0.623	3.47	0.49	11.7	180.5	--	--
13:35	5	25	150	21.84	--	7.12	0.623	3.25	0.47	11.5	180	--	--
13:40	5	30	150	21.84	--	7.13	0.623	3.2	0.47	11.6	180	--	--
13:45	5	35	150	21.84	--	7.12	0.623	3.4	0.44	11.6	181.1	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs List	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero North	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-13-22	Date	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)		
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.84	Total Depth (ft-bmp)	26.72	Water Column (ft)	3.88
Purge Start	12:14	Pump Intake (ft-bmp)	24.74	Purge Method	Low-Flow
Purge End	12:54	Volumes Purged	2.31	Sample ID	MW-23-22_GW-030723
Sample Time	12:51	Gallons Purged	1.45	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.63
				Purge Equipment	Peristaltic
				Sampled by	Leticia Ferreira
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:15	0	0	300	22.84	--	6.39	0.86	14.3	1	10.2	-56.1	--	--
12:20	5	5	150	22.84	--	10.4	0.9	11.2	0.71	10.5	-74.9	--	--
12:25	5	10	150	22.84	--	6.58	0.91	10.5	0.37	10.5	-85.5	--	--
12:30	5	15	150	22.84	--	6.62	0.92	9.5	0.29	10.5	-93.7	--	--
12:35	5	20	150	22.84	--	6.63	0.93	7.74	0.25	10.8	-96.3	--	--
12:40	5	25	150	22.84	--	6.64	0.93	5.07	0.26	10.8	-98.6	--	--
12:45	5	30	150	22.84	--	6.64	0.93	5.67	0.25	10.8	-99.7	--	--
12:50	5	35	150	22.84	--	6.64	0.92	4.9	0.26	10.9	-100.8	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs list	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Racer Pontiac MI	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: NA	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-14-22	Date	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	33.1 degrees F and Clear. The wind is blowing N at 15.0 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	23.38	Total Depth (ft-bmp)	34.63	Water Column (ft)	11.25
Purge Start	10:51	Pump Intake (ft-bmp)	29.13	Purge Method	Low-Flow
Purge End	11:44	Volumes Purged	0.91	Sample ID	MW-14-22_GW-030723
Sample Time	11:52	Gallons Purged	1.66	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.83
				Purge Equipment	Peristaltic
				Sampled by	Leticia Ferreira
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:52	0	0	300	23.38	--	9.12	125.7	34.3	6.48	11.2	127.1	--	--
10:57	5	5	150	23.38	--	8.71	0.537	27.8	7.05	11.3	142.7	--	--
11:02	5	10	150	23.38	--	8.56	0.543	22.3	7.61	11.41	144.9	--	--
11:07	5	15	150	23.38	--	8.2	0.561	17.5	8.61	11.6	143.9	--	--
11:12	5	20	150	23.38	--	7.79	0.581	14.2	7.91	11.5	143.5	--	--
11:17	5	25	150	23.38	--	7.58	0.593	8.5	7.95	11.5	144.5	--	--
11:22	5	30	150	23.38	--	7.5	0.603	7.93	8	11.5	144.9	--	--
11:27	5	35	150	23.38	--	7.46	0.602	7.63	7.98	11.6	145	--	--
11:32	5	40	150	23.38	--	7.45	0.614	7.51	7.98	11.5	144.9	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs list	40 mL Glass	9	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Racer Pontiac MI	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: NA	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-15-22	Date	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	36F, Sunny, NE 14 mph	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	23.48	Total Depth (ft-bmp)	35.94	Water Column (ft)	12.46
Purge Start	12:08	Pump Intake (ft-bmp)	33.5	Purge Method	Low-Flow
Purge End	12:48	Volumes Purged	1.24	Sample ID	MW-15-22_GW-030723
Sample Time	12:45	Gallons Purged	2.50	Replicate/ Code No.	DUP-02
				Well Casing Material	PVC
				Gallons in Well	2.02
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:10	0	0	150	23.49	--	7.21	0.823	8.91	0.92	12.1	-54.4	--	--
12:15	5	5	150	23.49	--	7.12	0.785	7.55	0.42	13.1	-86.7	--	--
12:20	5	10	150	23.49	--	7.12	0.784	8.22	0.43	13.1	-95.7	--	--
12:25	5	15	150	23.49	--	7.1	0.78	6.37	0.24	13.2	-99.8	--	--
12:30	5	20	150	23.49	--	7.09	0.778	7.13	0.18	13.3	-102.9	--	--
12:35	5	25	150	23.49	--	7.09	0.776	7.16	0.19	13.5	-105.4	--	--
12:40	5	30	150	23.49	--	7.09	0.779	7.45	0.19	13.4	-106.4	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: South Fiero	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-05	Date	03/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	34.0 degrees F and Mostly Cloudy. The wind is blowing N/NE at 13.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.31	Total Depth (ft-bmp)	22.77	Water Column (ft)	1.46
Purge Start	11:00	Pump Intake (ft-bmp)	22	Purge Method	Low-Flow
Purge End	12:12	Volumes Purged	11.39	Sample ID	MWF16-05_GW-030823
Sample Time	12:08	Gallons Purged	2.73	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.24
				Purge Equipment	Peristaltic
				Sampled by	Leticia Ferreira
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:02	0	0	300	21.31	--	8.78	0.395	404	7.87	8.7	119.9	--	--
11:07	5	5	150	21.31	--	8.07	0.78	587	4.85	8.5	125.1	--	--
11:12	5	10	150	21.31	--	7.74	1.01	1100	2.73	8.8	131.6	--	--
11:17	5	15	150	21.31	--	7.6	1.1	404	2.33	8.7	133.3	--	--
11:22	5	20	150	21.31	--	7.56	1.1	226	2.28	9.1	134.4	--	--
11:27	5	25	150	21.31	--	7.5	1.19	122	2.09	8.9	133.1	--	--
11:32	5	30	150	21.31	--	7.47	1.17	76.3	2.11	9.6	132.7	--	--
11:37	5	35	150	21.31	--	7.45	1.18	57.1	2.15	9.6	132.6	--	--
11:42	5	40	150	21.31	--	7.49	1.15	22.7	2.15	9.3	130.4	--	--
11:47	5	45	150	21.31	--	7.48	1.16	13.3	2.11	9.3	130.3	--	--
11:52	5	50	150	21.31	--	7.48	1.15	13	2.19	9.3	130.1	--	--
11:57	5	55	150	21.31	--	7.44	1.17	9.9	2.16	9.3	130.1	--	--
12:02	5	60	150	21.31	--	7.44	1.17	10	2.16	9.3	130.1	--	--
12:07	5	65	150	21.31	--	7.44	1.17	10.9	2.16	9.3	130.1	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs list	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Racer Pontiac MI	Well Locked at Arrival: no
Condition of Well:	Well Locked at Departure: no
Well Completion: NA	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-16	Date	03/06/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	36.0 degrees F and Cloudy. The wind is blowing E at 13.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	23.31	Total Depth (ft-bmp)	31.25	Water Column (ft)	7.94
Purge Start	12:56	Pump Intake (ft-bmp)	19	Purge Method	Low-Flow
Purge End	13:39	Volumes Purged	1.94	Sample ID	MWF16-16_GW-030623
Sample Time	13:37	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.29
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:58	0	0	150	23.31	--	7.6	0.879	23.2	10.54	11	176.3	--	--
13:03	5	5	150	23.31	--	7.63	0.794	8.92	3.32	12.3	151	--	--
13:08	5	10	150	23.31	--	7.62	0.777	7.24	3.9	12.5	143.7	--	--
13:13	5	15	150	23.31	--	7.6	0.75	5.84	3.94	12.6	141.6	--	--
13:18	5	20	150	23.31	--	7.58	0.73	5.81	3.94	12.7	141.3	--	--
13:23	5	25	150	23.31	--	7.56	0.699	4.41	3.68	12.7	141.9	--	--
13:28	5	30	150	23.31	--	7.56	0.694	4.79	3.33	12.8	143.6	--	--
13:33	5	35	150	23.31	--	7.57	0.692	5.2	3.52	12.7	145.4	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Ferio North	Well Locked at Arrival: _____
Condition of Well: Good condition,Missing bolts	Well Locked at Departure: _____
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-18	Date	03/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	34.0 degrees F and Mostly Cloudy. The wind is blowing N/NE at 13.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.80	Total Depth (ft-bmp)	31.95	Water Column (ft)	10.15
Purge Start	10:52	Pump Intake (ft-bmp)	29.55	Purge Method	Low-Flow
Purge End	11:37	Volumes Purged	1.52	Sample ID	MWF16-18_GW-030823
Sample Time	11:35	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.65
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:54	0	0	150	21.82	--	7.22	0.944	5.91	1.52	11.2	161.3	--	--
10:59	5	5	150	21.82	--	7.15	0.859	1.18	1.45	11.9	155.3	--	--
11:04	5	10	150	21.82	--	7.15	0.847	2.15	1.18	11.9	155.2	--	--
11:09	5	15	150	21.82	--	7.16	0.831	2.22	1.01	11.8	155.7	--	--
11:14	5	20	150	21.82	--	7.15	0.835	2.14	0.97	11.8	156.6	--	--
11:19	5	25	150	21.82	--	7.16	0.838	0.46	0.89	11.7	156.3	--	--
11:24	5	30	150	21.82	--	7.15	0.841	0.62	0.88	11.8	155.5	--	--
11:29	5	35	150	21.82	--	7.15	0.836	0.9	0.87	12	153.4	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: North Fiero	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-23	Date	03/07/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	37.0 degrees F and Clear.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	24.82	Total Depth (ft-bmp)	30.4	Water Column (ft)	5.58
Purge Start	13:50	Pump Intake (ft-bmp)	27.3	Purge Method	Low-Flow
Purge End	14:24	Volumes Purged	1.39	Sample ID	MW-16-23_GW-030723
Sample Time	14:22	Gallons Purged	1.27	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.91
				Purge Equipment	Peristaltic
				Sampled by	Leticia Ferreira
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:51	0	0	300	24.82	--	7.23	0.503	20.4	1.69	13.7	-0.6	--	--
13:56	5	5	150	24.82	--	7.35	0.503	9.19	1.36	13.7	-7.3	--	--
14:01	5	10	150	24.82	--	7.3	0.526	10.3	1.27	14	0.2	--	--
14:06	5	15	150	24.82	--	7.28	0.531	7.38	1.14	14.2	3.9	--	--
14:11	5	20	150	24.82	--	7.24	0.55	5.1	1.04	14.1	9.6	--	--
14:16	5	25	150	24.82	--	7.21	0.56	4.45	1.03	14	10	--	--
14:21	5	30	150	24.82	--	7.24	0.559	5.1	1.01	14.1	17.1	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs list	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Racer Pontiac MI	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: NA	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWOS-08	Date	03/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	37.9 degrees F and Mostly Cloudy. The wind is blowing N at 15.0 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.85	Total Depth (ft-bmp)	28.8	Water Column (ft)	1.95
Purge Start	12:45	Pump Intake (ft-bmp)	27.8	Purge Method	Low-Flow
Purge End	13:18	Volumes Purged		Sample ID	MWOS-08_GW-030823
Sample Time	13:17	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.32
				Purge Equipment	Peristaltic
				Sampled by	Leticia Ferreira
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:46	0	0	300	26.85	--	7.04	0.77	184	4.63	11.1	122.7	--	--
12:51	5	5	150	26.85	--	7.11	0.78	10.2	4.22	11.6	119.9	--	--
12:56	5	10	150	26.85	--	7.12	0.77	1.94	4.05	11.5	121.9	--	--
13:01	5	15	150	26.85	--	7.07	0.76	1.09	3.82	11.6	126.3	--	--
13:06	5	20	150	26.85	--	7.05	0.76	1.26	3.78	11.6	128.6	--	--
13:11	5	25	150	26.85	--	7.03	0.76	0.9	3.78	11.3	130.4	--	--
13:16	5	30	150	26.85	--	7.05	0.76	0.94	3.8	11.3	131.1	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Racer Pontiac MI	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: NA	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWOS-09R	Date	03/07/2023		
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	39.0 degrees F and Clear. The wind is blowing N at 15.0 mph.			
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2	Well Casing Material	PVC
Static Water Level (ft-bmp)	28.11	Total Depth (ft-bmp)	32.2	Water Column (ft)	4.09	Gallons in Well	0.66
Purge Start	15:06	Pump Intake (ft-bmp)	30.11	Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	15:40	Volumes Purged		Sample ID	MWOS-09R_GW-030723	Sampled by	Leticia Ferreira
Sample Time	15:38	Gallons Purged		Replicate/ Code No.	NA	Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:07	0	0	300	28.11	--	6.9	0.81	17.1	0.41	12.2	94.7	--	--
15:12	5	5	300	28.11	--	6.84	0.006	11.4	1.04	11.6	102.2	--	--
15:17	5	10	300	28.11	--	6.89	0.8	91.89	0.29	11.4	89.1	--	--
15:22	5	15	300	28.11	--	6.92	0.79	13.7	0.25	11.5	88.5	--	--
15:27	5	20	300	28.11	--	6.95	0.79	9.9	0.24	10.9	87.1	--	--
15:32	5	25	300	28.11	--	6.95	0.79	10	0.24	11.1	86	--	--
15:37	5	30	300	28.11	--	6.97	0.79	9	0.22	10.9	85.9	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs list	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Racer Pontiac MI	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: NA	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWOS-10	Date	03/07/2023		
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	37.9 degrees F and Clear. The wind is blowing N at 17.2 mph.			
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2	Well Casing Material	PVC
Static Water Level (ft-bmp)	29.25	Total Depth (ft-bmp)	32.74	Water Column (ft)	3.49	Gallons in Well	0.57
Purge Start	15:17	Pump Intake (ft-bmp)	31	Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	15:57	Volumes Purged	4.39	Sample ID	MWOS-10_GW-030723	Sampled by	Sommer Guy
Sample Time	15:55	Gallons Purged	2.50	Replicate/ Code No.	NA	Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:20	0	0	150	29.25	--	7.38	0.971	24.3	7.96	10.4	48.3	--	--
15:25	5	5	150	29.25	--	7.32	0.977	21.8	6.91	10	49.9	--	--
15:30	5	10	150	29.25	--	7.33	0.939	23.1	5.32	10	52.6	--	--
15:35	5	15	150	29.25	--	7.33	0.94	12.9	5.52	9.8	52.5	--	--
15:40	5	20	150	29.25	--	7.33	0.944	7.6	5.46	10	53.1	--	--
15:45	5	25	150	29.25	--	7.33	0.94	7.71	5.51	10	53.6	--	--
15:50	5	30	150	29.25	--	7.32	0.94	7.38	5.04	10.1	53.9	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: In sidewalk offsite	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-16-22	Date	04/07/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	36.0 degrees F and Mostly Clear. The wind is blowing N at 9.2 mph.	
Measuring Pt. Description	Top of Inner Casing	Screen Setting (ft-bmp)	--	Casing Diameter (in)	2
Static Water Level (ft-bmp)	27.03	Total Depth (ft-bmp)	34.49	Water Column(ft)	7.46
MP Elevation		Pump Intake (ft-bmp)	32	Purge Method	Low-Flow
Sample Time	11:48	Volumes Purged	3.31	Sample ID	MW-16-22_GW-040723
Purge Start	10:53	Gallons Purged	4.00	Replicate/ Code No.	
Purge End	10:51				

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:55	0	0	150	27.04	0.00	7.38	0.73	184	1.46	11.1	217.7	Clear	None
11:00	5	5	150	27.05	0.00	7.4	0.67	149	0.78	11.8	174.2	Clear	None
11:05	5	10	150	27.05	0.00	7.42	0.655	81.9	0.94	12	169	Clear	None
11:10	5	15	150	27.05	0.00	7.41	0.654	58.6	0.31	12	164.3	Clear	None
11:15	5	20	150	27.05	0.00	7.39	0.653	38.2	0.65	12.2	157.5	Clear	None
11:20	5	25	150	27.05	0.00	7.39	0.655	19.3	0.53	12.3	152.8	Clear	None
11:25	5	30	150	27.05	0.00	7.39	0.655	15	0.47	12.2	149.2	Clear	None
11:30	5	35	150	27.05	0.00	7.39	0.657	12.1	0.42	12.3	145.9	Clear	None
11:35	5	40	150	27.05	0.00	7.39	0.658	7.42	0.4	12.3	142.7	Clear	None
11:40	5	45	150	27.05	0.00	7.38	0.659	7.3	0.38	12.3	140.3	Clear	None
11:45	5	50	150	27.05	0.00	7.37	0.66	6.83	0.37	12.3	138.4	Clear	None

Constituent Sampled	Container	Number	Preservative
Full 8260 VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: South Fiero	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Stick-up	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius



Soil Vapor Collection Log Sheet

Office Name & Address (Reporting Information): Novi, MI 28550 Cabot Dr #500									Project Name: RACER Pontiac North Campus 2023						
Field Manager: Alexis Crisp									Project Number: 30167840						
Phone: 937-206-4005		Special Instructions: VOCs							Site Address: 200 E Montcalm Pontiac MI 48340 US						
Email Address for Result Reporting: Alexis.crisp@arcadis.com									Sampler Name: Sommer Guy				Phone Number:947-465-3421		
									Email:Alexis.crisp@arcadis.com						
Helium Detector Used: MGD-2002					Helium Leak Method: Helium Tracer Test				Summa Canister Size (1L, 2.7 L, 6L): 1 L					Lab: Eurofins	
Sample ID	Sample Location Description	Date	Leak/Tracer Test completed prior to sample collection						Canister Number	Flow Controller Number	Sample Collection Start Time	Beginning Canister Pressure (in. Hg)	Sample Collection End Time	Ending Canister Pressure (in. Hg)	Notes
			Shut in Test Pass/Fail?	Purge Reading (ppm)	Shroud Helium Concentration (%)	Helium Test Pass/Fail?	Purge Volume (mL)	Purge Rate (mL/min)							
SV-04-21_SG-032021	In sidewalk	03/20/2023	Pass	0	42.7	Pass	334.83	200	1134	2243	14:26	-28	14:32	-6	N/A
SV-03-21_SG-032023	In sidewalk	03/20/2023	Pass	0	42.8	Pass	187.5	200	3445	2242	13:09	-28	13:14	-6	N/A
DUP-01_SG-032023	In grass	03/20/2023	Pass	3400	40.5	Pass	328.14	200	2332	2217	12:17	-28	12:24	-6	N/A
SV-05-21_SG-032023	In sidewalk	03/20/2023	Pass	0	46.3	Pass	187.5	200	748	2242	14:03	-28	14:09	-6	N/A
SV-06-21_SG-032023	In sidewalk	03/20/2023	Pass	325	45.8	Pass	334.83	200	2405	23217	14:48	-28	14:54	-6	N/A
SV-01-21_SG-032023	In grass	03/20/2023	Pass	0	40.3	Pass	207.6	200	1803	2150	11:46	-28	11:51	-6	N/A
SV-02-21_SG-032023	In grass	03/20/2023	Pass	3400	40.5	Pass	328.14	200	3038	2228	12:17	-28	12:24	-6	N/A

Meteorological Data						General Notes or Observations	
Date	Time	Temp		Relative Humidity (%)	Barometric Pressure (in.Hg)	Weather source	
		Indoor	Outdoor				



Soil Vapor Collection Log Sheet

03/20/2023	10:53	N/A	37	35	30	37.0 degrees F and Clear. The wind is blowing undefined at 16.1 mph.	N/A
03/20/2023	10:53	N/A	37	35	30	37.0 degrees F and Clear. The wind is blowing undefined at 16.1 mph.	
03/20/2023	10:53	N/A	37	35	30	37.0 degrees F and Clear. The wind is blowing undefined at 16.1 mph.	
03/20/2023	10:53	N/A	37	35	30	37.0 degrees F and Clear. The wind is blowing undefined at 16.1 mph.	
03/20/2023	10:53	N/A	37	35	30	37.0 degrees F and Clear. The wind is blowing undefined at 16.1 mph.	
03/20/2023	10:53	N/A	37	35	30	37.0 degrees F and Clear. The wind is blowing undefined at 16.1 mph.	

Air Parameters (completed after sample collection)						
Location ID	CH4 %	CH4 LEL %	O2 %	PID (ppm)	Differential Pressure (in. Water Column)	
SV-04-21	0.1	NM	13.5	NM	NM	
SV-03-21	0	NM	15.4	NM	NM	
--	0.2	NM	20.4	NM	NM	
SV-05-21	0.1	NM	14	NM	NM	
SV-06-21	0	NM	13.5	NM	NM	
SV-01-21	0.1	NM	17	NM	NM	
SV-02-21	0.2	NM	20.4	NM	NM	

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-02-17	Date	06/06/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	60.8 degrees F and Cloudy. The wind is blowing N/NE at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	25.84	Total Depth (ft-bmp)	29.71	Water Column (ft)	3.87
Purge Start	10:09	Pump Intake (ft-bmp)	27.21	Purge Method	Low-Flow
Purge End	10:51	Volumes Purged		Sample ID	MW-02-17_GW-060623
Sample Time	10:50	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.63
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:11	0	0	150	25.85	--	7.09	1.27	18.4	2.24	17	-30.9	--	--
10:16	5	5	150	25.85	--	7.07	1.22	10.7	1.68	16.6	-37.4	--	--
10:21	5	10	150	25.85	--	7.03	1.17	0.87	0.83	16.3	-62.5	--	--
10:26	5	15	150	25.85	--	7.04	1.16	0.02	0.46	16.2	-73.2	--	--
10:31	5	20	150	25.85	--	7.07	1.16	0.02	0.39	16.3	-76.5	--	--
10:36	5	25	150	25.85	--	7.08	1.14	0.02	0.33	15.9	-75.7	--	--
10:41	5	30	150	25.85	--	7.09	1.13	0.02	0.36	16.1	-75.7	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: South fiero	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-05-18	Date	06/06/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	64.4 degrees F and Cloudy. The wind is blowing N/NE at 4.7 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	27.21	Total Depth (ft-bmp)	33.58	Water Column (ft)	6.37
Purge Start	12:11	Pump Intake (ft-bmp)	31.08	Purge Method	Low-Flow
Purge End	12:48	Volumes Purged		Sample ID	MW-05-18_GW-060623
Sample Time	12:45	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.04
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:15	0	0	150	27.22	--	7.31	0.71	0.02	1.74	17.1	32	--	--
12:20	5	5	150	27.22	--	7.3	0.72	0.02	0.54	15.9	31.4	--	--
12:25	5	10	150	27.22	--	7.29	0.72	0.02	0.38	15.7	31.6	--	--
12:30	5	15	150	27.22	--	7.3	0.71	0.02	0.42	16.7	32	--	--
12:35	5	20	150	27.22	--	7.3	0.71	0.02	0.43	16.5	32.1	--	--
12:40	5	25	150	27.22	--	7.3	0.71	0.02	0.39	16.7	31.9	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: South Fiero	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-06-20	Date	06/06/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	69.8 degrees F and Cloudy. The wind is blowing N/NE at 11.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.05	Total Depth (ft-bmp)	29.22	Water Column (ft)	3.17
Purge Start	13:34	Pump Intake (ft-bmp)	26.72	Purge Method	Low-Flow
Purge End	13:36	Volumes Purged		Sample ID	MW-06-20_GW-060623
Sample Time	14:48	Gallons Purged	0.00	Replicate/ Code No.	DUP-01
				Well Casing Material	PVC
				Gallons in Well	0.52
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:38	0	0	150	26.05	--	7.36	0.99	0.02	3.83	17.6	69.4	--	--
13:43	5	5	150	26.05	--	7.3	0.99	0.02	3.92	16.8	69.9	--	--
13:48	5	10	150	26.05	--	7.31	1	0.02	3.09	17.2	70.3	--	--
13:53	5	15	150	26.05	--	7.31	1.01	0.02	2.54	17	69.8	--	--
13:58	5	20	150	26.05	--	7.31	1.01	0.02	2.33	17.9	70.3	--	--
14:03	5	25	150	26.05	--	7.31	1	0.02	1.87	18.2	69	--	--
14:08	5	30	150	26.05	--	7.32	1.01	0.02	1.6	18.5	68.9	--	--
14:13	5	35	150	26.05	--	7.32	1.02	0.02	1.52	18.9	68.8	--	--
14:18	5	40	150	26.05	--	7.32	1.02	0.02	1.48	19.4	69.3	--	--
14:23	5	45	150	26.05	--	7.32	1.02	0.02	1.46	19.4	69.7	--	--
14:28	5	50	150	26.05	--	7.32	1.03	0.02	1.65	18	70	--	--
14:33	5	55	150	26.05	--	7.32	1.02	0.02	1.49	17	70	--	--
14:38	5	60	150	26.05	--	7.33	1.02	0.02	1.52	17	70.1	--	--
14:43	5	65	150	26.05	--	7.33	1.01	0.02	1.46	17.3	70.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero South	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-07-20	Date	06/06/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	64.4 degrees F and Cloudy. The wind is blowing N/NE at 6.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Well Casing Material	PVC				
Static Water Level (ft-bmp)	26.62	Total Depth (ft-bmp)	30.15	Water Column (ft)	3.53
Gallons in Well	0.57				
Purge Start	11:14	Pump Intake (ft-bmp)	27.65	Purge Method	Low-Flow
Purge Equipment	Peristaltic				
Purge End	11:48	Volumes Purged		Sample ID	MW-07-20_GW-060623
Sampled by	Samantha Hindle				
Sample Time	11:45	Gallons Purged	0.00	Replicate/ Code No.	NA
Sample Type	Grab				

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:15	0	0	150	26.64	--	7.53	0.8	0.02	5.03	17.3	17.3	--	--
11:20	5	5	150	26.63	--	7.47	0.81	0.02	3.4	16.4	23.3	--	--
11:25	5	10	150	26.63	--	7.47	0.81	0.02	3.21	16.9	26.5	--	--
11:30	5	15	150	26.63	--	7.47	0.83	0.02	2.62	16.7	31	--	--
11:35	5	20	150	26.63	--	7.46	0.84	0.02	2.6	16.6	33.2	--	--
11:40	5	25	150	26.63	--	7.46	0.85	0.02	2.51	16.6	35.4	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: South fiero	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-08-21	Date	06/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	53.6 degrees F and Haze. The wind is blowing NW at 3.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.84	Total Depth (ft-bmp)	30.28	Water Column (ft)	3.44
Purge Start	09:50	Pump Intake (ft-bmp)	27.78	Purge Method	Low-Flow
Purge End	10:52	Volumes Purged		Sample ID	MW-08-21_GW-060823
Sample Time	10:52	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.56
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:52	0	0	100	26.84	--	7.29	0.72	0.02	1.58	15.6	110.7	--	--
09:57	5	5	100	26.84	--	7.3	0.72	0.02	1.77	16.3	117.4	--	--
10:02	5	10	100	26.84	--	7.29	0.72	0.02	1.35	16.3	113.6	--	--
10:07	5	15	100	26.84	--	7.29	0.72	0.02	1.64	17.2	133.4	--	--
10:12	5	20	100	26.84	--	7.28	0.72	0.02	1.32	17.6	114.3	--	--
10:17	5	25	100	26.84	--	7.28	0.73	0.02	1.05	16.7	112.8	--	--
10:22	5	30	100	26.84	--	7.28	0.72	0.02	0.91	17.2	111.4	--	--
10:27	5	35	100	26.84	--	7.28	0.72	0.02	0.8	18.1	109.6	--	--
10:32	5	40	100	26.84	--	7.27	0.72	0.02	0.76	18.1	109.1	--	--
10:37	5	45	100	26.84	--	7.26	0.73	0.02	0.93	20	108.2	--	--
10:42	5	50	100	26.84	--	7.26	0.74	0.02	0.88	19.9	106	--	--
10:47	5	55	100	26.84	--	7.26	0.74	0.02	0.85	19.7	105.7	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero South	Well Locked at Arrival: no
Condition of Well: Broken thread tabs	Well Locked at Departure: no
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-09-22	Date	06/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	69.8 degrees F and Cloudy. The wind is blowing N at 6.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.23	Total Depth (ft-bmp)	32.83	Water Column (ft)	11.6
Purge Start	15:50	Pump Intake (ft-bmp)	30	Purge Method	Low-Flow
Purge End	16:34	Volumes Purged		Sample ID	MW-09-22_GW-060823
Sample Time	16:30	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.88
				Purge Equipment	Peristaltic
				Sampled by	Sierra Sider
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:53	0	0	150	21.23	--	7.55	0.64	1.59	1.69	16.2	178.5	--	--
15:58	5	5	150	21.23	--	7.54	0.63	2.6	1.3	16.5	179.4	--	--
16:03	5	10	150	21.23	--	7.53	0.63	2.1	1.13	16.4	179.5	--	--
16:08	5	15	150	21.23	--	7.5	0.65	1.09	0.85	16.4	181.2	--	--
16:13	5	20	150	21.23	--	7.49	0.65	0.72	0.74	16.5	181.4	--	--
16:18	5	25	150	21.23	--	7.48	0.68	0.67	0.71	16.4	181.1	--	--
16:23	5	30	150	21.23	--	7.48	0.67	1.13	0.67	16.6	181.1	--	--
16:26	3	33	150	21.23	--	7.48	0.68	0.49	0.67	16.4	180.9	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	50 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-13-22	Date	06/06/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	66.2 degrees F and Cloudy. The wind is blowing NE at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.95	Total Depth (ft-bmp)	26.72	Water Column (ft)	4.77
Purge Start	13:11	Pump Intake (ft-bmp)	24.2	Purge Method	Low-Flow
Purge End	13:47	Volumes Purged	3.85	Sample ID	MW-13-22_GW-060623
Sample Time	13:45	Gallons Purged	3.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.78
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:13	0	0	150	22.13	--	6.73	0.94	1.24	0.76	15.2	-10.2	--	--
13:18	5	5	150	22.13	--	6.72	0.92	0.63	0.37	15.3	-48.3	--	--
13:23	5	10	150	22.13	--	6.72	0.93	0.7	0.4	15.2	-66.2	--	--
13:28	5	15	150	22.13	--	6.72	0.94	0.24	0.36	15.3	-75.6	--	--
13:33	5	20	150	22.13	--	6.72	0.94	0.58	0.29	15.1	-82.4	--	--
13:38	5	25	150	22.13	--	6.73	0.94	0.22	0.28	15.1	-85.3	--	--
13:43	5	30	150	22.13	--	6.73	0.94	0.98	0.29	15.1	-86.8	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero south	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-14-22	Date	06/06/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	69.8 degrees F and Cloudy. The wind is blowing N/NE at 11.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.50	Total Depth (ft-bmp)	34.62	Water Column (ft)	12.12
Purge Start	14:03	Pump Intake (ft-bmp)	32.2	Purge Method	Low-Flow
Purge End	14:48	Volumes Purged		Sample ID	MW-14-22_GW-060623
Sample Time	14:40	Gallons Purged		Replicate/ Code No.	MW-14-22_GW-060623
				Well Casing Material	PVC
				Gallons in Well	1.97
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:05	0	0	150	22.50	--	7.5	0.596	1.88	1.43	16.2	37.6	--	--
14:10	5	5	150	22.50	--	7.5	0.601	3.36	0.51	15.8	4.3	--	--
14:15	5	10	150	22.50	--	7.51	0.602	1.41	0.39	15.8	-13.3	--	--
14:20	5	15	150	22.50	--	7.5	0.61	1.91	0.44	15.7	-21.2	--	--
14:25	5	20	150	22.50	--	7.5	0.61	1.25	0.3	15.6	-27	--	--
14:30	5	25	150	22.50	--	7.5	0.62	1.11	0.28	15.7	-30.4	--	--
14:35	5	30	150	22.50	--	7.5	0.62	1.05	0.29	15.7	-32.4	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	9	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero south	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-15-22	Date	06/06/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	60.8 degrees F and Haze. The wind is blowing N/NE at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.63	Total Depth (ft-bmp)	35.93	Water Column (ft)	13.3
Purge Start	09:19	Pump Intake (ft-bmp)	33.4	Purge Method	Low-Flow
Purge End	10:05	Volumes Purged	1.39	Sample ID	MW-15-22_GW-060623
Sample Time	10:00	Gallons Purged	3.00	Replicate/ Code No.	DUP-02_GW-060623
				Well Casing Material	PVC
				Gallons in Well	2.16
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:22	0	0	150	22.65	--	6.73	0.74	10.5	1.98	15.1	91	--	--
09:27	5	5	150	22.65	--	6.83	0.76	4.62	0.56	14.8	1.3	--	--
09:32	5	10	150	22.65	--	6.88	0.76	2.58	0.41	14.7	-32.9	--	--
09:37	5	15	150	22.65	--	6.88	0.77	1.67	0.4	14.7	-52.2	--	--
09:42	5	20	150	22.65	--	6.9	0.78	1.91	0.35	14.6	-64.2	--	--
09:47	5	25	150	22.65	--	6.92	0.78	1.79	0.3	14.5	-73.2	--	--
09:52	5	30	150	22.65	--	6.94	0.78	1.62	0.28	14.6	-76.6	--	--
09:57	5	35	150	22.65	--	6.95	0.78	1.74	0.28	14.6	-82	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero south	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-16-22	Date	06/06/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	71.6 degrees F and Cloudy. The wind is blowing N at 11.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.59	Total Depth (ft-bmp)	34.52	Water Column (ft)	7.93
Purge Start	15:20	Pump Intake (ft-bmp)	32	Purge Method	Low-Flow
Purge End	16:02	Volumes Purged	2.33	Sample ID	MW-16-22_GW-060623
Sample Time	16:00	Gallons Purged	3.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.29
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:22	0	0	150	26.59	--	7.26	0.68	9.01	1.84	16.8	130.6	--	--
15:27	5	5	150	26.59	--	7.24	0.68	10.6	0.72	16.6	112.2	--	--
15:32	5	10	150	26.59	--	7.23	0.68	11	0.39	19.2	93.9	--	--
15:37	5	15	150	26.59	--	7.22	0.69	7.33	0.43	16	86.6	--	--
15:42	5	20	150	26.59	--	7.23	0.68	7.24	0.57	16	77.2	--	--
15:47	5	25	150	26.59	--	7.23	0.68	6.87	0.6	16.1	69	--	--
15:52	5	30	150	26.59	--	7.23	0.68	6.07	0.62	16.2	62.3	--	--
15:57	5	35	150	26.59	--	7.24	0.68	6.41	0.59	16.1	60.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero south	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Stick-up	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF15-01	Date	06/07/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	71.6 degrees F and Partly Cloudy. The wind is blowing N/NE at 11.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	18.73	Total Depth (ft-bmp)	28.78	Water Column (ft)	10.05
Purge Start	15:56	Pump Intake (ft-bmp)	21.9	Purge Method	Low-Flow
Purge End	17:00	Volumes Purged		Sample ID	MWF15-01_GW-060723
Sample Time	16:58	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.63
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:57	0	0	150	18.73	--	7.15	1.11	95.2	1.17	17.5	58.3	--	--
16:02	5	5	150	18.77	--	7.16	1.1	82.2	0.71	18.6	57.5	--	--
16:07	5	10	150	18.73	--	7.16	1.1	54.6	0.53	18.4	57.6	--	--
16:12	5	15	150	18.73	--	7.16	1.12	52	0.4	18.2	58.1	--	--
16:17	5	20	150	18.73	--	7.16	1.1	49.5	0.24	17.9	58.3	--	--
16:22	5	25	150	18.73	--	7.16	1.08	42.8	0.31	18.7	57.4	--	--
16:27	5	30	150	18.73	--	7.17	1.08	36.8	0.3	18.6	56.4	--	--
16:32	5	35	150	18.73	--	7.18	1.01	33	0.32	18.2	56.6	--	--
16:37	5	40	150	18.73	--	7.18	1.01	32.6	0.31	18.3	55.6	--	--
16:42	5	45	150	18.73	--	7.19	0.96	28.5	0.25	17	55	--	--
16:47	5	50	150	18.73	--	7.19	0.96	26.6	0.3	17.6	53.8	--	--
16:52	5	55	150	18.73	--	7.2	0.93	25.3	0.29	17.7	54.1	--	--
16:57	5	60	150	18.73	--	7.2	0.93	23	0.31	17.4	54	Black	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: Tubing stuck multiple times, very hard to lower down , tried to get to 26.28 but could only get to 21.9

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero South	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-05	Date	06/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	71.6 degrees F and Mostly Cloudy.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	20.57	Total Depth (ft-bmp)	22.81	Water Column (ft)	2.24
Purge Start	12:59	Pump Intake (ft-bmp)	21.3	Purge Method	Low-Flow
Purge End	14:20	Volumes Purged		Sample ID	MWF16-05
Sample Time	14:15	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.36
				Purge Equipment	Peristaltic
				Sampled by	Sierra Sider
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:02	0	0	150	20.66	--	7.99	1.44	161	7.61	16	181.6	--	--
13:07	5	5	150	20.66	--	7.99	1.42	971	5.14	17.4	197	--	--
13:12	5	10	150	20.66	--	7.98	1.41	560	4.65	18.2	204.2	--	--
13:17	5	15	150	20.64	--	7.43	1.5		1.58	18.5	195.6	--	--
13:22	5	20	150	20.64	--	7.43	1.5	376	1.48	17	191	--	--
13:26	4	24	150	20.64	--	7.43	1.49	304	1.21	17.4	184.7	--	--
13:32	6	30	150	20.64	--	7.43	1.49	273	1.13	17.5	182.1	--	--
13:37	5	35	150	20.64	--	7.44	1.47	256	1.04	16.9	180.5	--	--
13:42	5	40	150	20.64	--	7.44	1.47	202	1.22	17.5	179.6	--	--
13:47	5	45	150	20.64	--	7.44	1.47	167	1.15	17.1	179.8	--	--
13:52	5	50	150	20.64	--	7.45	1.46	137	1.18	16.6	180.3	--	--
13:57	5	55	150	20.64	--	7.46	1.44	104	1.14	16.3	181.3	--	--
14:02	5	60	150	20.64	--	7.47	1.43	96.8	1.33	16.2	184.9	--	--
14:07	5	65	150	20.64	--	7.47	1.42	52.7	1.48	16.5	185.5	--	--
14:12	5	70	150	20.64	--	7.46	1.4	20.3	1.35	16.9	186.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	50 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL

Well Locked at Arrival: no

Condition of Well: Missing bolts,Needs repairs

Well Locked at Departure: no

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Well Completion: Flush mount

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-06	Date	06/09/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	66.2 degrees F and Clear. The wind is blowing N/NW at 5.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	14.64	Total Depth (ft-bmp)	28.85	Water Column (ft)	14.21
Purge Start	11:38	Pump Intake (ft-bmp)	26.35	Purge Method	Low-Flow
Purge End	12:29	Volumes Purged		Sample ID	MWF16-06_GW-060923
Sample Time		Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	2.31
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:40	0	0	150	14.64	--	7.77	0.373	36	5.51	16.1	91.5	--	--
11:45	5	5	150	14.85	--	7.8	0.366	31.1	3.96	16.5	72.2	--	--
11:50	5	10	150	14.85	--	7.83	0.361	30.6	3.85	16	68.1	--	--
11:55	5	15	150	14.85	--	7.83	0.361	12.7	4.4	15.4	68.7	--	--
12:00	5	20	150	14.85	--	7.84	0.359	21.4	4.36	15.5	68.5	--	--
12:05	5	25	150	14.85	--	7.85	0.359	9.15	3.77	16.7	67.1	--	--
12:10	5	30	150	14.85	--	7.84	0.36	6.13	3.58	17.1	67.7	--	--
12:15	5	35	150	14.85	--	7.84	0.361	1.89	3.36	17.2	68	--	--
12:20	5	40	150	14.85	--	7.84	0.362	1.7	3.42	17	68.5	--	--
12:25	5	45	150	14.85	--	7.83	0.361	0.96	3.41	17.1	68.9	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL fiero	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-07	Date	06/07/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	53.6 degrees F and Haze. The wind is blowing N/NW at 5.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	4.58	Total Depth (ft-bmp)	17.48	Water Column (ft)	12.9
Purge Start	10:49	Pump Intake (ft-bmp)	14.98	Purge Method	Low-Flow
Purge End	11:48	Volumes Purged		Sample ID	MWF16-07_GW-060723
Sample Time	11:45	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	2.1
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:51	0	0	150	4.58	--	6.21	1.01	15.5	1.42	14.4	30.8	--	--
10:56	5	5	150	5.22	--	6.21	1.01	14	0.85	14.6	11.2	--	--
11:01	5	10	150	5.22	--	6.2	1.01	16.8	0.21	14.3	-7.8	--	--
11:06	5	15	150	5.22	--	6.2	1	16.2	0.22	14.5	-9.9	--	--
11:11	5	20	150	5.22	--	6.2	1	8.52	0.24	15.3	-15.5	--	--
11:16	5	25	150	5.22	--	6.2	1	9.26	0.36	15.5	-19	--	--
11:21	5	30	150	5.22	--	6.2	1	9.5	0.41	15.6	-19.5	--	--
11:26	5	35	150	5.22	--	6.19	1	4.25	0.41	15.3	-20.2	--	--
11:31	5	40	150	5.22	--	6.19	0.99	0.02	0.38	16	-19.6	--	--
11:36	5	45	150	5.22	--	6.19	0.99	0.02	0.37	16	-19.7	--	--
11:41	5	50	150	5.22	--	6.19	0.99	0.02	0.4	15.6	-21.4	Yellow	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: South Fiero

Well Locked at Arrival: no

Condition of Well: Good condition,Missing bolts

Well Locked at Departure: no

Well Completion: Flush mount

Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-12	Date	06/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	71.6 degrees F and Mostly Cloudy.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	14.13	Total Depth (ft-bmp)	18.89	Water Column (ft)	4.76
Purge Start	14:54	Pump Intake (ft-bmp)	16.39	Purge Method	Low-Flow
Purge End	16:02	Volumes Purged		Sample ID	MWF16-12
Sample Time	15:58	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.77
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:56	0	0	150	14.13	--	7.97	0.327	21	1.88	16.2	100.5	--	--
15:01	5	5	150	14.13	--	7.95	0.327	7.91	1.09	16.1	98.5	--	--
15:06	5	10	150	16.74	--	7.96	0.326	19.1	1.7	16.4	96.6	--	--
15:11	5	15	150	16.74	--	7.95	0.327	10	0.8	15	97.3	--	--
15:16	5	20	150	16.42	--	7.94	0.325	31.2	0.89	15.9	97.3	--	--
15:21	5	25	100	16.45	--	7.95	0.33	46.6	0.94	15.1	97.1	--	--
15:26	5	30	100	16.45	--	7.93	0.336	35.7	0.74	14.4	99	--	--
15:31	5	35	100	16.45	--	7.94	0.336	27.6	0.51	14.8	98.7	--	--
15:36	5	40	100	17.10	--	7.92	0.335	104	0.59	14.8	99.3	--	--
15:41	5	45	100	17.35	--	7.92	0.348	42.4	0.58	14.8	98.9	--	--
15:46	5	50	100	17.32	--	7.91	0.348	30.7	0.55	15.5	99.7	--	--
15:51	5	55	150	17.32	--	7.89	0.351	30.1	0.81	16.1	99.5	--	--
15:56	5	60	150	17.32	--	7.9	0.355	21.4	0.68	15.9	99	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: Lowered tubing to 16.5 3:06 bc at 3:17 lowered I tubing to 16.6. At 3:21 lowered to 17.4

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL fiero	Well Locked at Arrival: yes
Condition of Well: Missing bolts	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-15	Date	06/07/2023		
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	64.4 degrees F and Cloudy. The wind is blowing N at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2	Well Casing Material	PVC
Static Water Level (ft-bmp)	21.98	Total Depth (ft-bmp)	35.48	Water Column (ft)	13.5	Gallons in Well	2.19
Purge Start	12:04	Pump Intake (ft-bmp)	32.98	Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	13:01	Volumes Purged		Sample ID	MWF16-15_GW-060723	Sampled by	Samantha Hindle
Sample Time	12:57	Gallons Purged	0.00	Replicate/ Code No.	NA	Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:07	0	0	150	21.98	--	7.18	0.587	0.02	1.08	16.1	-30.5	--	--
12:12	5	5	150	21.98	--	7.2	0.6	0.02	0.5	16.5	-32.7	--	--
12:17	5	10	150	21.98	--	7.2	0.61	0.02	0.38	16.3	-33.4	--	--
12:22	5	15	150	21.98	--	7.16	0.68	0.02	0.43	16.4	-30	--	--
12:27	5	20	150	21.98	--	7.17	0.68	0.02	0.37	16.4	-30	--	--
12:32	5	25	150	21.98	--	7.15	0.75	0.02	0.37	16.2	-27.1	--	--
12:42	10	35	150	21.98	--	7.15	0.79	0.02	0.44	16.7	-20.3	--	--
12:47	5	40	150	21.98	--	7.15	0.79	0.02	0.44	16.8	-19.3	--	--
12:52	5	45	150	21.98	--	7.15	0.8	0.02	0.4	16.4	-17.4	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: Merit lab courier picked up samples at 12:38

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: South fiero	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-16	Date	06/09/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	69.8 degrees F and Mostly Clear. The wind is blowing N/NW at 10.3 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.60	Total Depth (ft-bmp)	31.28	Water Column (ft)	8.68
Purge Start	12:56	Pump Intake (ft-bmp)	28.78	Purge Method	Low-Flow
Purge End	13:36	Volumes Purged		Sample ID	MWF16-16_GW-060923
Sample Time	13:32	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.41
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:57	0	0	150	22.60	--	7.43	0.571	7.63	2.93	18.1	92.8	--	--
13:02	5	5	150	22.60	--	7.41	0.573	5.73	1.61	17	87.5	--	--
13:07	5	10	150	22.60	--	7.41	0.573	5.5	1.6	17	87.2	--	--
13:12	5	15	150	22.60	--	7.42	0.575	3.9	1.88	17	84.8	--	--
13:17	5	20	150	22.60	--	7.42	0.577	2.17	1.48	17.1	82.9	--	--
13:22	5	25	150	22.60	--	7.41	0.577	2.2	1.46	17	82.3	--	--
13:27	5	30	150	22.60	--	7.41	0.578	2.29	1.36	17.3	79.7	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL fiero	Well Locked at Arrival: yes
Condition of Well: Missing bolts	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-17	Date	06/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	69.8 degrees F and Mostly Cloudy. The wind is blowing N at 3.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	20.16	Total Depth (ft-bmp)	31.81	Water Column (ft)	11.65
Purge Start	13:38	Pump Intake (ft-bmp)	29.31	Purge Method	Low-Flow
Purge End	14:35	Volumes Purged		Sample ID	MWF16-17
Sample Time	14:33	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.89
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:39	0	0	100	20.16	--	7.05	1.14	13	1.72	15.5	105	--	--
13:44	5	5	100	20.16	--	7.07	1.14	16	1.5	15.7	103.5	--	--
13:49	5	10	100	20.16	--	7.09	1.14	16.4	1.48	15.8	102.4	--	--
13:54	5	15	100	20.16	--	7.09	1.15	12.2	1.06	14.9	103.3	--	--
13:59	5	20	100	20.16	--	7.09	1.15	10.3	1	14.5	103.2	--	--
14:04	5	25	100	20.16	--	7.1	1.16	9.24	0.99	14.6	103.4	--	--
14:09	5	30	100	20.16	--	7.1	1.15	5.11	1.05	14.6	103.4	--	--
14:14	5	35	100	20.16	--	7.1	1.15	3.77	1.71	14.7	103.2	--	--
14:19	5	40	100	20.16	--	7.1	1.15	1.73	1.7	14.8	103.1	--	--
14:24	5	45	100	20.16	--	7.1	1.16	1.14	1.68	14.9	103.5	--	--
14:29	5	50	100	20.16	--	7.11	1.15	1.55	1.67	15	102.7	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL fiero	Well Locked at Arrival: yes
Condition of Well: Fair condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-18	Date	06/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	71.6 degrees F and Mostly Cloudy.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Well Casing Material	PVC				
Static Water Level (ft-bmp)	21.02	Total Depth (ft-bmp)	31.96	Water Column (ft)	10.94
Gallons in Well	1.78				
Purge Start	14:34	Pump Intake (ft-bmp)	29.4	Purge Method	Low-Flow
Purge Equipment	Peristaltic				
Purge End	15:28	Volumes Purged		Sample ID	MWF16-18_GW-060823
Sampled by	Sierra Sider				
Sample Time	15:25	Gallons Purged		Replicate/ Code No.	NA
Sample Type	Grab				

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:38	0	0	150	21.02	--	7.22	0.87	4.45	1.57	16.9	183.4	--	--
14:43	5	5	150	21.02	--	7.22	0.86	2.02	1.52	17.8	182.9	--	--
14:48	5	10	150	21.02	--	7.2	0.86	0.46	1.6	18.5	184.4	--	--
14:53	5	15	150	21.02	--	7.2	0.86	0.65	1.13	15.5	185.5	--	--
14:58	5	20	150	21.02	--	7.2	0.86	0.85	1.08	15.5	184.1	--	--
15:03	5	25	150	21.02	--	7.19	0.85	1.17	1.3	15.4	183.1	--	--
15:08	5	30	150	21.02	--	7.19	0.86	0.78	1.25	15.2	182.6	--	--
15:13	5	35	150	21.02	--	7.19	0.86	1.11	0.88	15.1	181.7	--	--
15:18	5	40	150	21.02	--	7.19	0.86	0.56	0.85	15.3	181.1	--	--
15:22	4	44	150	21.02	--	7.19	0.85	0.41	0.86	15.4	181	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	50 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL	Well Locked at Arrival: yes
Condition of Well: Cracked well pad	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-22	Date	06/09/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	69.8 degrees F and Partly Cloudy. The wind is blowing W/NW at 6.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.40	Total Depth (ft-bmp)	33.92	Water Column (ft)	11.52
Purge Start	14:05	Pump Intake (ft-bmp)	31.42	Purge Method	Low-Flow
Purge End	14:42	Volumes Purged		Sample ID	MWF16-16
Sample Time	14:38	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.87
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:06	0	0	150	22.40	--	7.29	0.487	14.7	1.85	18.9	84.5	--	--
14:11	5	5	150	22.40	--	7.28	0.493	7.41	1.62	18.4	82.3	--	--
14:16	5	10	130	23.40	--	7.32	0.496	6.52	0.48	17.7	77.7	--	--
14:21	5	15	130	23.40	--	7.33	0.495	20.1	0.42	17.2	77.7	--	--
14:26	5	20	130	23.40	--	7.34	0.494	4.28	0.36	17.1	77.1	--	--
14:31	5	25	130	23.40	--	7.34	0.493	4.16	0.34	17.4	76.8	--	--
14:36	5	30	130	23.40	--	7.34	0.496	3.3	0.34	17.5	76.5	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: Broken plug and lock

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL fiero	Well Locked at Arrival: no
Condition of Well: Missing bolts	Well Locked at Departure: no
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-23	Date	06/06/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	69.8 degrees F and Cloudy. The wind is blowing N/NE at 11.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	23.99	Total Depth (ft-bmp)	30.44	Water Column (ft)	6.45
Purge Start	15:24	Pump Intake (ft-bmp)	27.94	Purge Method	Low-Flow
Purge End	16:02	Volumes Purged		Sample ID	MWF16-23_GW-060623
Sample Time	15:58	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.05
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:26	0	0	150	23.99	--	7.12	0.99	4.62	1.71	18.1	58.6	--	--
15:31	5	5	150	23.99	--	7.12	0.99	2.37	0.62	17.1	58.8	--	--
15:36	5	10	150	23.99	--	7.13	0.98	1.47	0.39	17.2	57.6	--	--
15:41	5	15	150	23.99	--	7.14	0.97	1.2	0.33	16.8	57.6	--	--
15:46	5	20	150	23.99	--	7.14	0.97	0.02	0.26	16.8	57.1	--	--
15:51	5	25	150	23.99	--	7.15	0.96	0.02	0.26	16.8	56.6	--	--
15:56	5	30	150	23.99	--	7.16	0.95	0.02	0.28	16.8	56.6	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: South Fiero	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-25	Date	06/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	62.6 degrees F and Mostly Cloudy. The wind is blowing W at 5.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.10	Total Depth (ft-bmp)	37.19	Water Column (ft)	11.09
Purge Start	12:17	Pump Intake (ft-bmp)	34.69	Purge Method	Low-Flow
Purge End	12:58	Volumes Purged		Sample ID	MWF16-25
Sample Time	12:58	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.8
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:20	0	0	100	26.10	--	7.28	0.487	22.7	3.5	18.4	77.2	--	--
12:25	5	5	100	26.10	--	7.31	0.485	8.61	3.72	18.2	76	--	--
12:30	5	10	100	26.10	--	7.32	0.485	8.12	2.81	17.9	74.9	--	--
12:35	5	15	100	26.10	--	7.31	0.484	8.1	3.51	16.4	77.4	--	--
12:40	5	20	100	26.10	--	7.32	0.489	0.02	3.24	16.5	77.7	--	--
12:45	5	25	100	26.10	--	7.32	0.491	0.02	2.94	16.2	78.4	--	--
12:50	5	30	100	26.10	--	7.31	0.494	0.02	2.96	16.4	79.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero South	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF7-02	Date	06/07/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	66.2 degrees F and Cloudy. The wind is blowing N/NW at 12.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	19.42	Total Depth (ft-bmp)	22.62	Water Column (ft)	3.2
Purge Start	13:23	Pump Intake (ft-bmp)	20.12	Purge Method	Low-Flow
Purge End	14:21	Volumes Purged		Sample ID	MWF7-02
Sample Time	14:11	Gallons Purged	0.00	Replicate/ Code No.	MS/MSD
				Well Casing Material	PVC
				Gallons in Well	0.52
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:26	0	0	150	19.42	--	7.28	0.66	0.02	3.3	16.5	6.7	--	--
13:31	5	5	150	19.42	--	7.23	0.75	0.02	2.58	16.2	11.7	--	--
13:36	5	10	150	19.42	--	7.25	0.75	0.02	2.61	16.5	13	--	--
13:41	5	15	150	19.42	--	7.25	0.75	0.02	3.03	16.5	16.1	--	--
13:46	5	20	150	19.42	--	7.25	0.76	0.02	2.87	16.6	17	--	--
13:51	5	25	150	19.42	--	7.24	0.76	0.02	2.66	15.3	20.8	--	--
13:56	5	30	150	19.42	--	7.25	0.75	0.02	2.41	15.6	22	--	--
14:01	5	35	150	19.42	--	7.24	0.76	0.02	2.39	15.8	25.6	--	--
14:06	5	40	150	19.42	--	7.24	0.77	0.02	2.35	15.4	27.1	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	9	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero South	Well Locked at Arrival: yes
Condition of Well: Missing bolts	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWOS-08	Date	06/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	62.6 degrees F and Mostly Cloudy. The wind is blowing W at 5.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.07	Total Depth (ft-bmp)	28.8	Water Column (ft)	2.73
Purge Start	11:44	Pump Intake (ft-bmp)	26.3	Purge Method	Low-Flow
Purge End	12:29	Volumes Purged		Sample ID	MWOOS-08_GW-060823
Sample Time	12:20	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.44
				Purge Equipment	Peristaltic
				Sampled by	Sierra Sider
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:48	0	0	150	26.07	--	7.3	0.73	0.13	5.8	18	167.5	--	--
11:53	5	5	150	26.07	--	7.32	0.72	0.36	3.71	19.5	170.2	--	--
11:58	5	10	150	26.07	--	7.33	0.73	0.12	3.1	20.5	172.3	--	--
12:03	5	15	150	26.07	--	7.32	0.72	0.02	3.12	16.8	176.3	--	--
12:08	5	20	150	26.07	--	7.32	0.72	0.04	2.53	16.3	176.3	--	--
12:13	5	25	150	26.07	--	7.32	0.71	0.35	2.43	16.2	176.3	--	--
12:18	5	30	150	26.07	--	7.33	0.71	0.02	2.39	16.4	175.3	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	50 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Kennett street	Well Locked at Arrival: yes
Condition of Well: Missing bolts	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWOS-09R	Date	06/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	53.6 degrees F and Haze. The wind is blowing NW at 3.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	27.33	Total Depth (ft-bmp)	32.25	Water Column (ft)	4.92
Purge Start	10:17	Pump Intake (ft-bmp)	29.75	Purge Method	Low-Flow
Purge End	11:18	Volumes Purged		Sample ID	MWOS-09R_GW060823
Sample Time	11:10	Gallons Purged	0.00	Replicate/ Code No.	DUP-03_GW060823
				Well Casing Material	PVC
				Gallons in Well	0.8
				Purge Equipment	Peristaltic
				Sampled by	Sierra Sider
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:22	0	0	150	27.33	--	7.23	0.85	2.24	4.47	16.2	171.8	--	--
10:36	14	14	150	27.33	--	7.24	0.85	1.72	0.79	16	162.5	--	--
10:42	6	20	150	27.33	--	7.25	0.85	1.4	0.63	16	153.8	--	--
10:47	5	25	150	27.33	--	7.25	0.84	1.42	0.48	15.8	149.6	--	--
10:52	5	30	150	27.33	--	7.24	0.84	1.3	0.45	16.1	146.2	--	--
10:58	6	36	150	27.33	--	7.24	0.84	0.86	0.56	16.3	144.8	--	--
11:04	6	42	150	27.33	--	7.25	0.84	0.57	0.54	16.4	145	--	--
11:09	5	47	150	27.33	--	7.25	0.85	0.55	0.51	16.4	144.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	50 mL Glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Kenneth street	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWOS-10	Date	06/12/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	53.6 degrees F and Cloudy. The wind is blowing NW at 11.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	28.53	Total Depth (ft-bmp)	32.77	Water Column (ft)	4.24
Purge Start	11:31	Pump Intake (ft-bmp)	30.27	Purge Method	Low-Flow
Purge End	12:35	Volumes Purged		Sample ID	MWOS-10_GW-061223
Sample Time	12:33	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.69
				Purge Equipment	Submersible
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:32	0	0	300	28.58	--	7.24	0.72	1030	2.1	14.2	106	--	--
11:37	5	5	300	28.57	--	7.28	0.71	776	1.78	14.3	83.9	--	--
11:42	5	10	300	28.57	--	7.27	0.72	465	1.71	14.4	79.8	--	--
11:47	5	15	300	28.57	--	7.27	0.72	247	1.63	14.5	71.8	--	--
11:52	5	20	300	28.57	--	7.27	0.73	143	1.57	14.5	64.4	--	--
11:57	5	25	300	28.57	--	7.27	0.73	71.4	1.57	14.4	56.4	--	--
12:02	5	30	300	28.57	--	7.27	0.73	47.5	1.53	14.5	50.4	--	--
12:07	5	35	300	28.57	--	7.27	0.73	38.1	1.43	14.5	44.9	--	--
12:12	5	40	300	28.57	--	7.27	0.73	14.2	1.41	14.5	36.2	--	--
12:17	5	45	300	28.57	--	7.27	0.73	10.3	1.4	14.5	31.4	--	--
12:22	5	50	300	28.57	--	7.27	0.73	15.7	1.4	14.7	27.4	--	--
12:27	5	55	300	28.57	--	7.27	0.73	7.4	1.47	14.8	23.1	--	--
12:32	5	60	300	28.57	--	7.27	0.74	3.59	1.47	14.6	21.4	Orange	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero South	Well Locked at Arrival: no
Condition of Well: Good condition	Well Locked at Departure: no
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	TW-12-22	Date	06/08/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	71.6 degrees F and Mostly Cloudy. The wind is blowing N/NW at 12.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	1
Static Water Level (ft-bmp)	22.96	Total Depth (ft-bmp)	37.7	Water Column (ft)	14.74
Purge Start	16:31	Pump Intake (ft-bmp)	32.75	Purge Method	Low-Flow
Purge End	17:37	Volumes Purged		Sample ID	TW-12-22
Sample Time	17:35	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.6
				Purge Equipment	Peristaltic
				Sampled by	Samantha Hindle
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:32	0	0	150	23.11	--	7.67	0.405	362	0.01	18	-81.6	--	--
16:37	5	5	150	23.01	--	7.7	0.406	765	0.01	17.6	-98	--	--
16:42	5	10	150	23.01	--	7.71	0.405	327	0.4	16.4	-109.2	--	--
16:47	5	15	130	23.01	--	7.66	0.411	129	0.47	17.1	-102.7	--	--
16:52	5	20	130	23.01	--	7.6	0.418	73.4	1.1	17.3	-88.1	--	--
16:57	5	25	130	23.01	--	7.6	0.42	54.6	0.99	17.1	-87.5	--	--
17:02	5	30	130	23.01	--	7.58	0.423	48.5	0.91	16.9	-83.8	--	--
17:07	5	35	130	23.01	--	7.56	0.425	32.2	0.86	16.8	-80.6	--	--
17:12	5	40	130	23.01	--	7.56	0.425	30.8	0.85	17.1	-78.6	--	--
17:17	5	45	130	23.01	--	7.56	0.428	25.2	0.87	17.1	-76.3	--	--
17:22	5	50	130	23.01	--	7.54	0.427	22.7	0.8	17.2	-73.9	--	--
17:27	5	55	130	23.01	--	7.54	0.429	18.9	0.84	17.4	-72.8	--	--
17:32	5	60	130	23.01	--	7.54	0.428	20.4	0.8	17.6	-72.8	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: Tubing stuck on screen would not lower more

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL fiero	Well Locked at Arrival: no
Condition of Well: Fair condition	Well Locked at Departure: no
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	UNKNOWN-01	Date	06/07/2023		
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	69.8 degrees F and Mostly Cloudy. The wind is blowing NE at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2	Well Casing Material	PVC
Static Water Level (ft-bmp)	18.57	Total Depth (ft-bmp)	24.06	Water Column (ft)	5.49	Gallons in Well	0.89
Purge Start	14:42	Pump Intake (ft-bmp)	21.56	Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	15:23	Volumes Purged		Sample ID	UNKNOWN-01_GW-060723	Sampled by	Samantha Hindle
Sample Time	15:20	Gallons Purged	0.00	Replicate/ Code No.	NA	Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:43	0	0	150	18.64	--	6.92	1.26	0.02	2.82	16	56.3	--	--
14:48	5	5	150	18.64	--	6.94	1.25	0.02	2.13	16.6	56.7	--	--
14:53	5	10	150	18.64	--	6.94	1.25	0.02	2.07	17.2	57.5	--	--
14:58	5	15	150	18.64	--	6.94	1.26	0.02	1.94	16.4	59.2	--	--
15:03	5	20	150	18.64	--	6.94	1.24	0.02	1.81	16.4	60	--	--
15:08	5	25	150	18.64	--	6.95	1.24	0.02	1.7	16.6	61	--	--
15:13	5	30	150	18.64	--	6.95	1.24	0.02	1.69	16.6	61.6	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: South fiero	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius



Soil Vapor Collection Log Sheet

Office Name & Address (Reporting Information): Novi, MI 28550 Cabot Dr #500 Novi, MI 48377									Project Name: RACER Pontiac North Campus 2023						
Field Manager: Alexis Crisp									Project Number: 30167840						
Phone: 614-985-9163		Special Instructions: 1,1-DCE; cis-1,2-DCE; trans-1,2-DCE; PCE; TCE; Vinyl Chloride							Site Address: 200 E. Montcalm Pontiac Michigan 48342 US						
Email Address for Result Reporting:									Sampler Name: Sommer Guy				Phone Number:947-465-3421		
Alexis.crisp@arcadis.com									Email:Alexis.crisp@arcadis.com						
Helium Detector Used: MGD-2002				Helium Leak Method: Helium Tracer Test					Summa Canister Size (1L, 2.7 L, 6L): 1 L					Lab: Eurofins	
Sample ID	Sample Location Description	Date	Leak/Tracer Test completed prior to sample collection						Canister Number	Flow Controller Number	Sample Collection Start Time	Beginning Canister Pressure (in. Hg)	Sample Collection End Time	Ending Canister Pressure (in. Hg)	Notes
			Shut in Test Pass/Fail?	Purge Reading (ppm)	Shroud Helium Concentration (%)	Helium Test Pass/Fail?	Purge Volume (mL)	Purge Rate (mL/min)							
SV-02-21_SG-060523	In grass. Eastern ROW of St. Clair	06/05/2023	Pass	200	45.3	Pass	321	100	2297	24312	12:16	-29	12:23	-5	N/A
SV-05-21_SG-060523	In sidewalk. Western ROW of St. Clair	06/05/2023	Pass	0	55.8	Pass	160.74	100	3632	24414	13:08	-28	13:14	-5	N/A
SV-01-21_SG-060523	In grass. Eastern ROW of St. Clair	06/05/2023	Pass	0	44.8	Pass	200.91	100	4109	24671	10:06	-29	10:14	-5	N/A
SV-03-21_SG-060623	In sidewalk. Western ROW of St. Clair	06/05/2023	Pass	0	54.6	Pass	160.74	100	3548	23364	12:18	-29	12:26	-5	N/A
SV-06-21_SG-060523	In sidewalk. Western ROW of St. Clair	06/05/2023	Pass	0	58.5	Pass	309.15	100	1729	23442	12:47	-29	12:53	-5	N/A
DUP-01_SG-060523	In grass. Eastern ROW of St. Clair	06/05/2023	--	--	--	--	--	--	3871	24294	--	-29	--	-5	N/A
SV-04-21_SG-060523	In grass. Western ROW of St. Clair	06/05/2023	Pass	0	56.6	Pass	309.15	150	1915	23771	12:38	-28	12:44	-5	N/A

Meteorological Data						General Notes or Observations	
Date	Time	Temp		Relative Humidity (%)	Barometric Pressure (in.Hg)	Weather source	
		Indoor	Outdoor				
06/05/2023	08:53		61	51	30	60.8 degrees F and Cloudy. The wind is blowing N at 2 mph	
06/06/2023	11:53		66	60	30	66.2 degrees F and Cloudy. The wind is blowing undefined at 8.1 mph.	



Soil Vapor Collection Log Sheet

Air Parameters (completed after sample collection)					
Location ID	CH4 %	CH4 LEL %	O2 %	PID (ppm)	Differential Pressure (in. Water Column)
SV-02-21	0	NM	16.3	NM	NM
SV-05-21	0	NM	13.4	NM	NM
SV-01-21	0	NM	16.3	NM	NM
SV-03-21	0	NM	14	NM	NM
SV-06-21	0	NM	12.9	NM	NM
--	NM	NM	NM	NM	NM
SV-04-21	0	NM	12.6	NM	NM

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-06-20	Date	08/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	73.0 degrees F and Mostly Cloudy. The wind is blowing W/SW at 11.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.02	Total Depth (ft-bmp)	29.55	Water Column (ft)	3.53
Purge Start	12:50	Pump Intake (ft-bmp)	27.5	Purge Method	Low-Flow
Purge End		Volumes Purged	3.71	Sample ID	MW-06-20_GW-082923
Sample Time	13:30	Gallons Purged	2.11	Replicate/ Code No.	DUP-01_GW-082923
				Well Casing Material	PVC
				Gallons in Well	0.57
				Purge Equipment	Peristaltic
				Sampled by	Kaylee DeRoo
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:55	0	0	200	26.02	0.26	7.45	0.85	0.49	1.45	17	102	--	--
13:00	5	5	200	26.02	0.53	7.45	0.85	0.43	1.39	16.9	86.1	--	--
13:05	5	10	200	26.02	7.93	7.48	0.86	0.02	1.27	16.9	28	--	--
13:10	5	15	200	26.02	1.06	7.48	0.87	0.02	1.21	16.7	2	--	--
13:15	5	20	200	26.02	1.32	7.48	0.86	0.02	1.14	16.7	-10.4	--	--
13:20	5	25	200	26.02	1.59	7.48	0.87	0.02	1.1	16.7	-16.3	--	--
13:25	5	30	200	26.02	1.85	7.48	0.87	0.02	1.13	16.6	-18.9	Clear	None

Constituent Sampled	Container	Number	Preservative
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Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: In residential area.	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-08-21	Date	08/28/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	72.0 degrees F and Mostly Clear. The wind is blowing at 5.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.83	Total Depth (ft-bmp)	30.7	Water Column (ft)	3.87
Purge Start	15:20	Pump Intake (ft-bmp)	28	Purge Method	Low-Flow
Purge End		Volumes Purged	3.35	Sample ID	MW-08-21
Sample Time	16:00	Gallons Purged	2.11	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.63
				Purge Equipment	Peristaltic
				Sampled by	Kaylee DeRoo
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:25	0	0	200	26.83	0.26	7.39	1.17	1.78	7.97	16.8	105.4	--	--
15:30	5	5	200	26.83	0.53	7.4	1.15		4.69	16.9	83.3	--	--
15:35	5	10	200	26.83	0.79	7.4	1.17	0.31	1.16	17	63.6	--	--
15:40	5	15	200	26.83	10.57	7.4	1.17	0.18	4.37	17.1	59.1	--	--
15:45	5	20	200	26.83	1.32	7.39	1.16	0.02	4.21	16.9	51	--	--
15:50	5	25	200	26.83	1.59	7.39	1.16	0.02	4.01	17	43.4	--	--
15:55	5	30	200	26.83	1.85	7.39	1.16	0.02	3.93	16.8	41.3	Clear	None

Constituent Sampled	Container	Number	Preservative
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Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: In residential area.	Well Locked at Arrival: no
Condition of Well: Good condition	Well Locked at Departure: no
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-13-22	Date	08/30/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)		
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.20	Total Depth (ft-bmp)	27.5	Water Column (ft)	6.3
Purge Start	09:55	Pump Intake (ft-bmp)	25	Purge Method	Low-Flow
Purge End		Volumes Purged	1.81	Sample ID	MW-13-22_GW-083023
Sample Time	10:30	Gallons Purged	1.85	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.02
				Purge Equipment	Peristaltic
				Sampled by	Kaylee DeRoo
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:00	0	0	200	21.20	0.26	6.78	0.94	4.83	0.45	14	-53.3	--	--
10:05	5	5	200	21.20	0.53	6.83	0.95	3.76	1.05	13.9	-90.8	--	--
10:10	5	10	200	21.20	0.79	6.84	0.95	0.62	1.01	14	-93.9	--	--
10:15	5	15	200	21.20	1.06	6.85	0.95	0.02	0.98	14.1	-102.6	--	--
10:20	5	20	200	21.20	1.32	6.85	0.95	0.02	0.95	14	-105.9	--	--
10:25	5	25	200	21.20	1.59	6.86	0.95	0.02	0.93	14	-107.8	Clear	None

Constituent Sampled	Container	Number	Preservative
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Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: In fenced in area.	Well Locked at Arrival: no
Condition of Well: Good condition	Well Locked at Departure: no
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-14-22	Date	08/30/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	55.9 degrees F and Cloudy. The wind is blowing N/NW at 13.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	27.20	Total Depth (ft-bmp)	35.2	Water Column (ft)	8
Purge Start	10:55	Pump Intake (ft-bmp)	32.5	Purge Method	Low-Flow
Purge End		Volumes Purged	1.22	Sample ID	MW-14-22_GW-083023
Sample Time	11:25	Gallons Purged	1.59	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.3
				Purge Equipment	Peristaltic
				Sampled by	Kaylee DeRoo
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:00	0	0	200	27.20	0.26	7.6	0.586	1.22	0.97	14	-47.2	--	--
11:05	5	5	200	27.20	0.53	7.6	0.586	0.02	1.77	14	-50.3	--	--
11:10	5	10	200	27.20	0.79	7.6	0.588	0.02	1.45	14	-51.8	--	--
11:15	5	15	200	27.20	1.06	7.6	0.59	0.02	1.46	14	-52.9	--	--
11:20	5	20	200	27.20	1.32	7.59	0.598	0.02	1.42	14	-55.9	Clear	None

Constituent Sampled	Container	Number	Preservative
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Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: In fenced in area.	Well Locked at Arrival: no
Condition of Well: Good condition	Well Locked at Departure: no
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-15-22	Date	08/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	75.0 degrees F and Cloudy. The wind is blowing W/SW at 9.2 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	23.40	Total Depth (ft-bmp)	36.5	Water Column (ft)	13.1
Purge Start	15:05	Pump Intake (ft-bmp)	32	Purge Method	Low-Flow
Purge End		Volumes Purged	0.87	Sample ID	MW-15-22_GW-082923
Sample Time	15:40	Gallons Purged	1.85	Replicate/ Code No.	DUP-02_GW-082923
				Well Casing Material	PVC
				Gallons in Well	2.13
				Purge Equipment	Peristaltic
				Sampled by	Kaylee DeRoo
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:10	0	0	200	23.40	0.26	8.37	0.34	7.84	5.99	15.8	73.4	--	--
15:15	5	5	200	23.40	0.53	7.24	0.72	8.52	4.04	15.5	-41.4	--	--
15:20	5	10	200	23.40	0.79	7.24	0.73	8.37	3.85	15.6	-87	--	--
15:25	5	15	200	23.40	1.06	7.24	0.74	9.37	3.39	15.4	-110.8	--	--
15:30	5	20	200	23.40	1.32	7.24	0.74	8.7	3.46	15.4	-116.8	--	--
15:35	5	25	200	23.40	1.59	7.24	0.75	8.7	3.49	15.3	-119.2	Clear	None

Constituent Sampled	Container	Number	Preservative
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Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Within Racer property.	Well Locked at Arrival: no
Condition of Well: Good condition,Missing lock	Well Locked at Departure: no
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-23	Date	08/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	73.0 degrees F and Mostly Cloudy. The wind is blowing S/SW at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	23.20	Total Depth (ft-bmp)	30.75	Water Column (ft)	7.55
Purge Start	14:05	Pump Intake (ft-bmp)	26.5	Purge Method	Low-Flow
Purge End		Volumes Purged	1.50	Sample ID	MWF16-23_GW-082923.
Sample Time	14:40	Gallons Purged	1.85	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.23
				Purge Equipment	Peristaltic
				Sampled by	Kaylee DeRoo
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:10	0	0	200	23.83	0.26	7.09	0.9	1.88	4.04	17.2	57.4	--	--
14:15	5	5	200	23.85	0.53	7.12	0.9	1.06	3.73	17.3	-3.1	--	--
14:20	5	10	200	23.90	0.79	7.13	0.92	0.69	2.71	16.8	-20.2	--	--
14:25	5	15	200	23.90	1.06	7.13	0.91	0.34	2.59	16.9	-31	--	--
14:30	5	20	200	23.90	1.32	7.14	0.9	0.17	2.5	17	-35.6	--	--
14:35	5	25	200	23.90	1.59	7.14	0.9	0.02	2.41	17.1	-39.1	Clear	None

Constituent Sampled	Container	Number	Preservative
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Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: In residential area.

Well Locked at Arrival: yes

Condition of Well: Missing bolts

Well Locked at Departure: yes

Well Completion: Flush mount

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWOS-08	Date	08/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	61.0 degrees F and Partly Cloudy. The wind is blowing SW at 5.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.01	Total Depth (ft-bmp)	29.15	Water Column (ft)	3.14
Purge Start	10:20	Pump Intake (ft-bmp)	27	Purge Method	Low-Flow
Purge End		Volumes Purged	2.59	Sample ID	MWOS-08_GW-082923
Sample Time	10:45	Gallons Purged	1.32	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.51
				Purge Equipment	Peristaltic
				Sampled by	Kaylee DeRoo
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:25	0	0	200	26.03	0.26	7.31	0.75	0.4	2.62	15.4	49.1	--	--
10:30	5	5	200	26.03	0.53	7.34	0.74	0.02	2.45	15.3	48	--	--
10:35	5	10	200	26.04	0.79	7.35	0.73	0.02	2.33	15.4	47	--	--
10:40	5	15	200	26.04	1.06	7.36	0.73	0.02	2.31	15.3	43.3	Clear	Mild

Constituent Sampled	Container	Number	Preservative
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Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: In residential area.	Well Locked at Arrival: yes
Condition of Well: Good condition,Missing bolts	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWOS-09R	Date	08/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	69.1 degrees F and Mostly Cloudy. The wind is blowing SW at 11.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	27.50	Total Depth (ft-bmp)	29.8	Water Column (ft)	2.3
Purge Start	11:25	Pump Intake (ft-bmp)	28	Purge Method	Low-Flow
Purge End		Volumes Purged	6.43	Sample ID	MWOS-09R_GW-082923
Sample Time	12:10	Gallons Purged	2.38	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.37
				Purge Equipment	Peristaltic
				Sampled by	Kaylee DeRoo
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:30	0	0	200	27.25	0.26	7.26	0.99	2.34	0.57	16.6	123.3	--	--
11:35	5	5	200	27.27	0.53	7.29	1.03	3.44	0.39	16.4	45.2	--	--
11:40	5	10	200	27.27	0.79	7.29	1.06	8.35	0.52	16.3	0.8	--	--
11:45	5	15	200	27.27	1.06	7.28	1.07	6.92	0.52	16.3	-10.5	--	--
11:50	5	20	200	27.27	1.32	7.29	1.07	5.13	0.53	16.2	-32.4	--	--
11:55	5	25	200	27.27	1.59	7.29	1.07	3.92	0.52	16.4	-52.4	--	--
12:00	5	30	200	27.27	1.85	7.29	1.07	4.33	0.52	16.5	-50.5	--	--
12:05	5	35	200	27.27	2.11	7.29	1.07	3.95	0.53	16.3	-48.7	Clear	None

Constituent Sampled	Container	Number	Preservative
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Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: In residential area.

Well Locked at Arrival: no

Condition of Well: Good condition

Well Locked at Departure: no

Well Completion: Flush mount

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWOS-10	Date	08/28/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	69.1 degrees F and Mostly Clear. The wind is blowing N at 9.2 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	28.55	Total Depth (ft-bmp)	31.5	Water Column (ft)	2.95
Purge Start	13:10	Pump Intake (ft-bmp)	29	Purge Method	Low-Flow
Purge End		Volumes Purged	11.01	Sample ID	MWOS-10_GW-082823
Sample Time	14:50	Gallons Purged	5.28	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.48
				Purge Equipment	Peristaltic
				Sampled by	Kaylee DeRoo
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:15	0	0	200	27.55	0.26	7.35	0.92	47.5	2.29	16	143.3	--	--
13:20	5	5	200	27.55	0.53	7.36	0.94	35.7	2.4	15.8	140.6	--	--
13:25	5	10	200	27.55	0.79	7.37	0.93	29.1	2.4	15.9	92.8	--	--
13:30	5	15	200	27.55	1.06	7.37	0.93		2.39	15.8	71.2	--	--
13:35	5	20	200	27.55	1.32	7.38	0.95	17.6	1.25	15.8	79.6	--	--
13:40	5	25	200	27.55	1.59	7.37	0.93	13.3	1.3	15.7	70.3	--	--
13:45	5	30	200	27.55	1.85	7.38	0.92	10.8	1.35	15.7	65.4	--	--
13:50	5	35	200	27.55	2.11	7.37	0.92	8.06	1.71	15.7	66.8	--	--
13:55	5	40	200	28.55	2.38	7.37	0.92	36.5	1.48	15.9	64.9	--	--
14:00	5	45	200	28.55	2.64	7.37	0.93	34.2	2.32	15.5	66.7	--	--
14:05	5	50	200	28.55	2.91	7.37	0.92	31.9	2.24	15.6	63.6	--	--
14:10	5	55	200	28.55	3.17	7.37	0.92	30.5	2.12	15.6	62.8	--	--
14:15	5	60	200	28.55	3.43	7.37	0.92	30.2	2.07	15.6	64	--	--
14:20	5	65	200	28.55	3.70	7.37	0.92	24.5	0.92	15.7	63.8	--	--
14:25	5	70	200	28.55	3.96	7.37	0.92	21.4	0.92	15.7	63.8	--	--
14:30	5	75	200	28.55	4.23	7.37	0.92	18.9	0.92	15.7	63.2	--	--
14:35	5	80	200	28.55	4.49	7.37	0.92	16.7	0.92	15.7	62.7	--	--
14:40	5	85	200	28.55	4.76	7.37	0.92	15.1	0.92	15.7	62.4	--	--
14:45	5	90	200	28.55	5.02	7.37	0.92	11.4	0.92	15.7	63.8	Clear	None

Constituent Sampled	Container	Number	Preservative
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Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Well Information

Well Location:	In residential area.	Well Locked at Arrival:	no
Condition of Well:	Good condition	Well Locked at Departure:	no
Well Completion:	Flush mount	Key Number To Well:	NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-09-22	Date	9/7/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	71.1 degrees F and Haze. The wind is blowing W at 5.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
				Well Casing Material	PVC
Static Water Level (ft-bmp)	20.90	Total Depth (ft-bmp)	33.37	Water Column (ft)	12.47
				Gallons in Well	2.03
Purge Start	12:41	Pump Intake (ft-bmp)	30.8	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	13:19	Volumes Purged	1.23	Sample ID	MW-09-22_GW-090723
				Sampled by	Sommer Guy
Sample Time	13:17	Gallons Purged	2.5	Replicate/ Code No.	NA
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:43	0	0	130	20.91	0.00	7.3	0.79	5.72	2.25	16.5	163.6	Clear	None
12:48	5	5	130	20.91	0.00	7.32	0.71	8.21	0.49	16.4	141.7	Clear	None
12:53	5	10	130	20.91	0.00	7.35	0.73	10.1	0.35	16.6	123.6	Clear	None
12:58	5	15	130	20.91	0.00	7.36	0.74	8.55	0.3	16.6	110.5	Clear	None
13:03	5	20	130	20.91	0.00	7.34	0.75	9.15	0.28	16.4	104.9	Clear	None
13:08	5	25	130	20.91	0.00	7.35	0.76	8.97	0.27	16.5	102.7	Clear	None
13:13	5	30	130	20.91	0.00	7.36	0.76	8.26	0.27	16.8	97.5	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL property	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-16-22	Date	9/7/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	70.0 degrees F and Light Drizzle and Fog/Mist. The wind is blowing NW at 9.2 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.28	Total Depth (ft-bmp)	34.76	Water Column (ft)	8.48
Purge Start	14:01	Pump Intake (ft-bmp)	32.2	Purge Method	Low-Flow
Purge End	14:44	Volumes Purged	1.81	Sample ID	MW-16-22_GW-090723
Sample Time	14:43	Gallons Purged	2.5	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.38
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:03	0	0	130	26.29	0.00	7.29	0.73	2.2	1.05	17.6	76.4	Clear	None
14:08	5	5	130	26.29	0.00	7.27	0.73	6.32	0.35	17.7	15	Clear	None
14:13	5	10	130	26.29	0.00	7.33	0.73	7.91	0.22	17.7	-6.5	Clear	None
14:18	5	15	130	26.29	0.00	7.35	0.73	5.5	0.19	18	-22	Clear	None
14:23	5	20	130	26.29	0.00	7.33	0.73	7.25	0.23	17.6	-33.6	Clear	None
14:28	5	25	130	26.29	0.00	7.32	0.73	5	0.17	17.5	-39.8	Clear	None
14:33	5	30	130	26.29	0.00	7.34	0.73	4.92	0.18	17.3	-45.3	Clear	None
14:38	5	35	130	26.29	0.00	7.34	0.73	4.58	0.18	17.3	-49.5	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: South Fiero	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Stick-up	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-05	Date	9/7/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	66.9 degrees F and Fog/Mist. The wind is blowing SW at 5.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
				Well Casing Material	PVC
Static Water Level (ft-bmp)	20.11	Total Depth (ft-bmp)	23	Water Column (ft)	2.89
				Gallons in Well	0.47
Purge Start	09:36	Pump Intake (ft-bmp)	22	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	10:38	Volumes Purged	5.32	Sample ID	MWF16-05_GW-090723
				Sampled by	Sommer Guy
Sample Time	10:35	Gallons Purged	2.5	Replicate/ Code No.	NA
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:38	0	0	120	20.25	0.00	7.38	0.95	116	9.41	16.9	171.6	Clear	None
09:43	5	5	120	20.21	0.00	7.34	1.25	180	7.24	16.2	156	Clear	None
09:48	5	10	120	20.21	0.00	7.37	1.26	86.6	6.04	15.9	141.3	Clear	None
09:53	5	15	120	20.21	0.00	7.38	1.23	35.2	5.77	15.9	132.1	Clear	None
09:58	5	20	120	20.21	0.00	7.38	1.21	25	5.45	15.7	126.4	Clear	None
10:03	5	25	120	20.21	0.00	7.39	1.18	22.6	5.24	15.7	121.3	Clear	None
10:08	5	30	120	20.21	0.00	7.38	1.17	14.7	5.03	15.6	118.5	Clear	None
10:13	5	35	120	20.21	0.00	7.4	1.15	16.3	4.99	15.5	115.5	Clear	None
10:18	5	40	120	20.21	0.00	7.4	1.15	10.8	4.9	15.5	113.3	Clear	None
10:23	5	45	120	20.21	0.00	7.4	1.12	8.44	4.73	15.6	110.2	Clear	None
10:28	5	50	120	20.21	0.00	7.4	1.12	8.93	4.85	15.5	109.5	Clear	None
10:33	5	55	120	20.21	0.00	7.4	1.1	8.45	4.65	15.5	107.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL property	Well Locked at Arrival:
Condition of Well:	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-16	Date	9/7/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	68.0 degrees F and Fog/Mist. The wind is blowing W/NW at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.22	Total Depth (ft-bmp)	31.25	Water Column (ft)	9.03
Purge Start	11:43	Pump Intake (ft-bmp)	28.75	Purge Method	Low-Flow
Purge End	12:27	Volumes Purged	1.70	Sample ID	MWF16-16_GW-090723
Sample Time	12:25	Gallons Purged	2.5	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.47
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:45	0	0	130	22.22	0.00	7.36	0.83	8.96	1.82	16	174.2	Clear	None
11:50	5	5	130	22.22	0.00	7.32	0.83	7.99	0.39	16.1	154.7	Clear	None
11:55	5	10	130	22.22	0.00	7.35	0.83	5.66	0.26	15.9	137.4	Clear	None
12:00	5	15	130	22.22	0.00	7.38	0.84	7.89	0.19	15.8	125.4	Clear	None
12:05	5	20	130	22.22	0.00	7.41	0.85	0.95	0.21	15.9	114.1	Clear	None
12:10	5	25	130	22.22	0.00	7.4	0.83	4.12	0.19	16	108.2	Clear	None
12:15	5	30	130	22.22	0.00	7.39	0.84	3.56	0.18	15.8	103.4	Clear	None
12:20	5	35	130	22.22	0.00	7.42	0.84	3.2	0.18	15.9	101.9	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL property	Well Locked at Arrival:
Condition of Well: Good condition,Missing bolts	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-18	Date	9/7/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	66.9 degrees F and Fog/Mist. The wind is blowing W at 5.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
				Well Casing Material	PVC
Static Water Level (ft-bmp)	20.51	Total Depth (ft-bmp)	32	Water Column (ft)	11.49
				Gallons in Well	1.87
Purge Start	10:52	Pump Intake (ft-bmp)	29.5	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	11:30	Volumes Purged	1.34	Sample ID	MWF16-18_GW-090723
				Sampled by	Sommer Guy
Sample Time	11:28	Gallons Purged	2.5	Replicate/ Code No.	NA
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:54	0	0	120	20.52	0.00	7.05	0.92	0.73	5.17	16.6	144.4	Clear	None
10:59	5	5	120	20.52	0.00	7.02	0.9	2.62	3.96	16.1	125.5	Clear	None
11:04	5	10	120	20.52	0.00	7.06	0.9	2.89	3.87	16	108.6	Clear	None
11:09	5	15	120	20.52	0.00	7.09	0.9	0.61	3.43	16.2	99.1	Clear	None
11:14	5	20	120	20.52	0.00	7.08	0.9	0.18	3.25	16.1	95.5	Clear	None
11:19	5	25	120	20.52	0.00	7.09	0.9	0.02	3.15	16.2	93.4	Clear	None
11:24	5	30	120	20.52	0.00	7.09	0.9	0.02	3.18	16.1	92.1	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL property

Well Locked at Arrival:

Condition of Well: Good condition,Missing bolts

Well Locked at Departure:

Well Completion: Flush mount

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius



Soil Vapor Collection Log Sheet

Office Name & Address (Reporting Information): Novi, MI 28550 Cabot Dr #500 Novi, MI										Project Name: RACER Pontiac North Campus 2023						
Field Manager: Alexis Crisp										Project Number: 30167840						
Phone: 937-206-4005			Special Instructions: TO-15							Site Address: 200 E Montcalm St Pontiac MI 48340 US						
Email Address for Result Reporting:										Sampler Name: Sommer Guy				Phone Number:947-465-3421		
Alexis.crisp@arcadis.com										Email:Alexis.crisp@arcadis.com						
Helium Detector Used: MGD-2002					Helium Leak Method: Helium Tracer Test					Summa Canister Size (1L, 2.7 L, 6L): 1 L					Lab: Eurofins	
Sample ID	Sample Location Description	Date	Leak/Tracer Test completed prior to sample collection						Canister Number	Flow Controller Number	Sample Collection Start Time	Beginning Canister Pressure (in. Hg)	Sample Collection End Time	Ending Canister Pressure (in. Hg)	Notes	
			Shut in Test Pass/Fail?	Purge Reading (ppm)	Shroud Helium Concentration (%)	Helium Test Pass/Fail?	Purge Volume (mL)	Purge Rate (mL/min)								
SV-02-21_SG-082823	Eastern ROW of St. Clair	08/28/2023	Pass	0	42.2	Pass	334.83	100	3658	25204	13:39	-29	13:47	-5	N/A	
SV-05-21_SG-082823	Western ROW of St. Clair	08/28/2023	Pass	0	51.5	Pass	174.12	100	2055	23525	14:42	-29	14:49	-5	N/A	
SV-04-21_SG-082823	Western ROW of St. Clair	08/28/2023	Pass	0	46.6	Pass	321.45001	100	2036	23796	14:23	-29	14:30	-5	N/A	
SV-03-21_SG-082821	Western ROW of St. Clair	08/28/2023	Pass	0	52.8	Pass	174.12	100	3698	25237	14:08	-29	14:15	-5	N/A	
SV-06-21_SG-082823	Western ROW of St. Clair	08/28/2023	Pass	0	46.3	Pass	321.45001	100	2825	23826	15:00	-29	15:06	-5	N/A	
SV-01-21_SG-082823	Eastern ROW of St. Clair	08/28/2023	Pass	0	45.2	Pass	200.91	100	3775	23425	13:18	-29	13:26	-5	N/A	
DUP-01_SG-082823	Eastern ROW of St. Clair	08/28/2023	Pass	0	42.2	Pass	334.83	100	2480	24501	13:39	-29	13:48	-5	N/A	

Meteorological Data							General Notes or Observations
Date	Time	Temp		Relative Humidity (%)	Barometric Pressure (in.Hg)	Weather source	
		Indoor	Outdoor				
08/28/2023	11:53		69	51	30	69.1 degrees F and Mostly Clear. The wind is blowing N at 9.2 mph.	N/A

Air Parameters (completed after sample collection)						
Location ID	CH4 %	CH4 LEL %	O2 %	PID (ppm)	Differential Pressure (in. Water Column)	
SV-02-21	0	NM	14.3	NM	NM	
SV-05-21	0	NM	10.7	NM	NM	
SV-04-21	0	NM	12.8	NM	NM	
SV-03-21	0	NM	10.5	NM	NM	



Soil Vapor Collection Log Sheet

SV-06-21	0	NM	12.8	NM	NM
SV-01-21	0	NM	13.3	NM	NM
--	0	NM	14.3	NM	NM

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-02-17	Date	12/01/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	40 and rainy	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	25.84	Total Depth (ft-bmp)	29.73	Water Column (ft)	3.89
Purge Start	10:01	Pump Intake (ft-bmp)	27.2	Purge Method	Low-Flow
Purge End		Volumes Purged		Sample ID	MW-02-17_GW-120123
Sample Time	10:35	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.63
				Purge Equipment	Peristaltic
				Sampled by	Alaina Pitera
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:06	0	0	--	25.84	--	7.32	0.6	15	3.42	12.4	-57.2	--	--
10:11	5	5	--	25.84	--	7.24	0.556	0.78	2.45	12.2	-56.5	--	--
10:16	5	10	--	25.84	--	7.23	0.539	3.99	2.58	12.1	-56.8	--	--
10:21	5	15	--	25.84	--	7.25	0.517	2.41	2.44	12	-56.7	--	--
10:26	10	20	--	25.84	--	7.24	0.516	2.34	2.51	11.9	-59	--	--
10:31	5	25	--	25.84	--	7.25	0.517	1.76	2.53	11.9	-58.1	Clear	

Constituent Sampled	Container	Number	Preservative
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Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Well Locked at Arrival:

Condition of Well:

Well Locked at Departure:

Well Completion: NA

Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-05-18	Date	12/01/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	40 and rainy	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	27.24	Total Depth (ft-bmp)	33.61	Water Column (ft) 6.37	Gallons in Well
Purge Start	12:19	Pump Intake (ft-bmp)	31.1	Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID MW-05-18_GW-120123	Sampled by Alaina Pitera
Sample Time	12:55	Gallons Purged		Replicate/ Code No. NA	Sample Type

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:22	0	0	--	27.24	--	7.49	0.346	8.34	3.03	12.1	-1.7	--	--
12:27	5	5	--	27.24	--	7.42	0.339	6.82	0.78	12.1	-9	--	--
12:32	5	10	--	27.24	--	7.45	0.327	4.8	0.48	11.6	-6.8	--	--
12:37	5	15	--	27.24	--	7.4	0.322	2.8	0.45	11.4	-6	--	--
12:42	5	20	--	27.24	--	7.4	0.323	0.02	0.44	11.4	-5.8	--	--
12:47	5	25	--	27.24	--	7.4	0.322	0.02	0.41	11.4	-5.6	--	--
12:52	5	30	--	27.24	--	7.4	0.33	0.02	0.42	11.4	-5.3		

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: _____	Well Locked at Arrival: _____
Condition of Well: _____	Well Locked at Departure: _____
Well Completion: NA _____	Key Number To Well: NA _____

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-06-20	Date	11/30/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	28 sunny	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Well Casing Material	PVC				
Static Water Level (ft-bmp)	26.09	Total Depth (ft-bmp)	29.24	Water Column (ft)	3.15
Gallons in Well	0.51				
Purge Start	10:11	Pump Intake (ft-bmp)	27	Purge Method	Low-Flow
Purge Equipment	Peristaltic				
Purge End		Volumes Purged		Sample ID	MW-06-20_GW-113023
Sampled by	Alaina Pitera				
Sample Time	10:50	Gallons Purged		Replicate/ Code No.	NA
Sample Type	Grab				

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:18	0	0	--	26.09	--	7.6	0.44	8.04	2.6	12.5	175.1	--	--
10:23	5	5	--	26.09	--	7.37	0.407	5.17	2.05	12.9	145.2	--	--
10:28	5	10	--	26.09	--	7.58	0.398	2.97	1.85	13.2	124.6	--	--
10:33	5	15	--	26.09	--	7.62	0.396	2.97	1.68	13.4	114.8	--	--
10:38	5	20	--	26.09	--	7.5	0.396	1.32	1.7	13.7	103.1	--	--
10:43	5	25	--	26.09	--	7.47	0.395	1.47	1.56	13.5	93.9	--	--
10:48	5	30	--	26.09	--	7.47	0.396	1.4	1.57	13.5	93.8	Clear	None

Constituent Sampled	Container	Number	Preservative
NA	NA	3	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	Well Locked at Arrival: yes
Condition of Well:	Well Locked at Departure: yes
Well Completion: NA	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-07-20	Date	12/01/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	40 and rainy	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	26.67	Total Depth (ft-bmp)	30.18	Water Column (ft) 3.51	Gallons in Well
Purge Start		Pump Intake (ft-bmp)	27.7	Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID MW-07-20_GW-120123	Sampled by Alaina Pitera
Sample Time	11:45	Gallons Purged		Replicate/ Code No. NA	Sample Type

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:07	0	0	--	26.67	--	7.72	0.34	1.46	3.75	8.7	-23.6	--	--
11:12	5	5	--	26.67	--	7.8	0.56	0.98	2.8	8.5	-23.5	--	--
11:17	5	10	--	26.67	--	7.8	0.56	0.76	2.9	8.8	-24.1	--	--
11:22	5	15	--	26.67	--	7.8	0.57	0.02	2.56	8.9	-24.3	--	--
11:27	5	20	--	26.67	--	7.7	0.33	0.02	2.8	8.2	-28.8	--	--
11:32	5	25	--	26.67	--	7.7	0.327	0.02	2.7	7.7	-28.8	--	--
11:37	5	30	--	26.67	--	7.68	0.322	0.02	2.7	7.7	-27.3	--	--
11:42	5	35	--	26.67	--	7.68	0.324	0.02	2.68	7.75	-27.4		

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	Well Locked at Arrival:
Condition of Well:	Well Locked at Departure:
Well Completion: NA	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-08-21	Date	11/30/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	28.9 degrees F and Mostly Cloudy. The wind is blowing S/SW at 4.7 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.82	Total Depth (ft-bmp)	30.3	Water Column (ft)	3.48
Purge Start	11:38	Pump Intake (ft-bmp)	28	Purge Method	Low-Flow
Purge End	12:15	Volumes Purged	4.39	Sample ID	MW-08-21_GW-113023
Sample Time	12:13	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.57
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:40	0	0	125	26.85	--	7.56	1.39	0.02	6.25	13.3	102.7	--	--
11:45	5	5	125	26.85	--	7.52	1.5	0.02	7.92	13	99	--	--
11:50	5	10	125	26.85	--	7.49	1.55	0.02	7.28	13	97.6	--	--
11:55	5	15	125	26.85	--	7.47	1.55	0.02	7.04	13	95.9	--	--
12:00	5	20	125	26.85	--	7.46	1.54	0.02	6.57	12.8	95.1	--	--
12:05	5	25	125	26.85	--	7.46	1.53	0.02	6.32	12.9	94.1	--	--
12:10	5	30	125	26.85	--	7.44	1.54	0.02	6.1	13.1	93.8	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero powerhouse	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-09-22	Date	11/30/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	39.9 degrees F and Mostly Cloudy. The wind is blowing S/SW at 9.2 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.21	Total Depth (ft-bmp)	32.82	Water Column (ft)	11.61
Purge Start	12:54	Pump Intake (ft-bmp)	30.2	Purge Method	Low-Flow
Purge End	13:38	Volumes Purged	1.32	Sample ID	MW-09-22_GW-113023
Sample Time	13:35	Gallons Purged	2.50	Replicate/ Code No.	DUP-01_GW-113023
				Well Casing Material	PVC
				Gallons in Well	1.89
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:55	0	0	125	21.22	--	7.55	0.618	12.6	4.29	13.2	52.8	--	--
13:00	5	5	125	21.22	--	7.5	0.637	11.8	3.71	13.1	55.2	--	--
13:05	5	10	125	21.22	--	7.48	0.65	10.8	3.46	12.9	56.3	--	--
13:10	5	15	125	21.22	--	7.45	0.69	4.84	3.34	12.9	58	--	--
13:15	5	20	125	21.22	--	7.43	0.72	4.08	3.12	12.9	60	--	--
13:20	5	25	125	21.22	--	7.41	0.74	1.92	2.45	12.9	61.9	--	--
13:25	5	30	125	21.22	--	7.4	0.75	1.49	2.37	12.7	63.4	--	--
13:30	5	35	125	21.22	--	7.4	0.76	1.2	2.25	12.7	64.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-13-22	Date	11/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	26.1 degrees F and Cloudy. The wind is blowing SW at 11.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.33	Total Depth (ft-bmp)	26.72	Water Column (ft)	5.39
Purge Start	13:04	Pump Intake (ft-bmp)	24.2	Purge Method	Low-Flow
Purge End	13:42	Volumes Purged	2.84	Sample ID	MW-13-22_GW-112923
Sample Time	13:40	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.88
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:06	0	0	125	21.63	--	6.95	0.89	2.96	9.95	11.3	32	--	--
13:11	5	5	125	21.62	--	6.86	0.92	4	9.61	11.6	27.9	--	--
13:16	5	10	125	21.62	--	6.84	0.95	4.4	0.95	11.7	25.7	--	--
13:21	5	15	125	21.62	--	6.83	0.96	3.18	9.02	11.8	23.1	--	--
13:26	5	20	125	21.62	--	6.83	0.96	1.82	8.69	12	20.5	--	--
13:31	5	25	125	21.62	--	6.83	0.96	1.25	8.48	12.2	18.5	--	--
13:36	5	30	125	21.62	--	6.83	0.96	1.2	8.22	12.2	16.3	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero powerhouse	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-14-22	Date	11/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	25.0 degrees F and Cloudy. The wind is blowing S/SW at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.51	Total Depth (ft-bmp)	34.66	Water Column (ft)	12.15
Purge Start	12:08	Pump Intake (ft-bmp)	32.1	Purge Method	Low-Flow
Purge End	12:50	Volumes Purged	1.27	Sample ID	MW-14-22_GW-112923
Sample Time	12:45	Gallons Purged	2.50	Replicate/ Code No.	MW-14-22_GW-112923
				Well Casing Material	PVC
				Gallons in Well	1.97
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:09	0	0	125	22.52	--	7.66	0.488	6.95	10.06	10.5	47.2	--	--
12:14	5	5	125	22.52	--	7.63	0.528	5.02	10.43	10.6	39.2	--	--
12:19	5	10	125	22.52	--	7.6	0.566	5.91	9.73	11	35	--	--
12:24	5	15	125	22.52	--	7.6	0.581	5.19	9.79	10.9	33.4	--	--
12:29	5	20	125	22.52	--	7.59	0.584	2.33	9.53	11	31.8	--	--
12:34	5	25	125	22.52	--	7.59	0.584	2.47	9.1	11.1	30.3	--	--
12:39	5	30	125	22.52	--	7.58	0.585	2.2	9.01	11.3	29.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	9	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero powerhouse	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-15-22	Date	11/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	21.9 degrees F and Cloudy. The wind is blowing S/SW at 10.3 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.65	Total Depth (ft-bmp)	35.96	Water Column (ft)	13.31
Purge Start	10:56	Pump Intake (ft-bmp)	33.4	Purge Method	Low-Flow
Purge End	11:34	Volumes Purged	1.16	Sample ID	MW-15-22_GW-112923
Sample Time	11:30	Gallons Purged	2.50	Replicate/ Code No.	DUP-02_GW-112923
				Well Casing Material	PVC
				Gallons in Well	2.16
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:57	0	0	125	22.65	--	7.17	0.568	0.74	2.5	10.7	52.3	--	--
11:02	5	5	125	22.65	--	7.17	0.7	2.52	1.56	10.9	45	--	--
11:07	5	10	125	22.65	--	7.14	0.71	1.2	1.43	11	40.8	--	--
11:12	5	15	125	22.65	--	7.13	0.73	0.38	1.21	11.2	34.5	--	--
11:17	5	20	125	22.65	--	7.13	0.73	0.02	1.16	11.2	32.4	--	--
11:22	5	25	125	22.65	--	7.14	0.73	0.02	1.15	11.2	28.9	--	--
11:27	5	30	125	22.65	--	7.14	0.73	0.02	1.2	11.1	25.9	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero powerhouse	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MW-16-22	Date	11/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	21.0 degrees F and Cloudy. The wind is blowing S/SW at 10.3 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.62	Total Depth (ft-bmp)	34.49	Water Column (ft)	7.87
Purge Start	10:05	Pump Intake (ft-bmp)	32	Purge Method	Low-Flow
Purge End	10:42	Volumes Purged	1.95	Sample ID	MW-16-22_GW-112923
Sample Time	10:40	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.28
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:07	0	0	125	26.62	--	7.53	0.638	9.21	6.89	8.5	90	--	--
10:12	5	5	125	26.62	--	7.52	0.65	5.08	6.76	8.6	75	--	--
10:17	5	10	125	26.62	--	7.52	0.676	3.33	6.73	8.5	67.1	--	--
10:22	5	15	125	26.62	--	7.51	0.644	4	6.49	8.8	63.3	--	--
10:27	5	20	125	26.62	--	7.51	0.643	3.89	6.4	8.9	62.3	--	--
10:32	5	25	125	26.62	--	7.5	0.64	3.68	6.16	9	60.9	--	--
10:37	5	30	125	26.62	--	7.5	0.645	3.2	6	8.9	59.9	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Fiero powerhouse	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Stick-up	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF15-01	Date	12/04/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	33.1 degrees F and Cloudy. The wind is blowing NW at 9.2 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	18.92	Total Depth (ft-bmp)	28.75	Water Column (ft)	9.83
Purge Start	13:03	Pump Intake (ft-bmp)	20.3	Purge Method	Low-Flow
Purge End		Volumes Purged	0.63	Sample ID	MWF15-01_GW-120423
Sample Time	14:07	Gallons Purged	1.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.6
				Purge Equipment	Peristaltic
				Sampled by	Garrett Link
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:05	0	0	115	18.92	--	7.41	1.18	31.2	2.06	10.1	34.6	--	--
13:10	5	5	115	18.92	--	7.34	1.23	18.6	0.63	10.2	39.7	--	--
13:15	5	10	115	18.92	--	7.34	1.24	10.4	0.54	10.4	39.5	--	--
13:20	5	15	115	18.92	--	7.35	1.25	5.81	0.5	10.7	38.1	--	--
13:25	5	20	115	18.92	--	7.32	1.23	2.99	0.42	10.8	37.6	--	--
13:30	5	25	115	18.92	--	7.35	1.21	2.03	0.41	10.8	36.8	--	--
13:35	5	30	115	18.92	--	7.35	1.17	2.65	0.37	10.9	36.2	--	--
13:40	5	35	115	18.92	--	7.35	1.15	2.52	0.39	10.8	35.3	--	--
13:45	5	40	115	18.92	--	7.35	1.13	2.97	0.39	11	34.6	--	--
13:50	5	45	115	18.92	--	7.36	1.1	2.45	0.36	11.2	33.5	--	--
13:55	5	50	115	18.92	--	7.36	1.08	1.14	0.35	10.8	32.8	--	--
14:00	5	55	115	18.92	--	7.37	1.05	0.71	0.3	11.1	31.7	--	--
14:05	5	60	115	18.92	--	7.38	1.01	0.02	0.29	11.2	29.7	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: Some blockage encounter in well casing at 5' and 20.5' - well cannot be sampled 2.5' from the bottom of the screened interval.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Powerhouse	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-06	Date	11/28/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	25.0 degrees F and Partly Cloudy.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	14.92	Total Depth (ft-bmp)	28.66	Water Column (ft)	13.74
Purge Start	14:07	Pump Intake (ft-bmp)	26.65	Purge Method	Low-Flow
Purge End	14:52	Volumes Purged		Sample ID	MWF16-06-GW_112823
Sample Time	14:50	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	2.23
				Purge Equipment	Submersible
				Sampled by	Samantha Szpaichler
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:11	0	0	110	15.12	--	8.21	0.23	9.1	13.2	6.4	97.5	--	--
14:16	5	5	110	15.12	--	8.14	0.234	10.9	5.83	6.7	97.7	--	--
14:21	5	10	110	15.12	--	8.24	0.232	10.2	5.46	7.5	97.1	--	--
14:26	5	15	110	15.04	--	7.96	0.23	12.7	4.71	8.1	95.9	--	--
14:31	5	20	110	15.14	--	8.05	0.227	11.9	4.73	8.4	94.4	--	--
14:36	5	25	110	15.14	--	8.09	0.226	2.51	4.71	8.9	92	--	--
14:41	5	30	110	15.14	--	8.07	0.227	2.5	4.8	8.8	90.7	--	--
14:46	5	35	110	15.14	--	8.05	0.229	0.02	4.8	9	89.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL, SE	Well Locked at Arrival: yes
Condition of Well: Okay condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-07	Date	12/05/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	33.1 degrees F and Light Snow and Fog/Mist. The wind is blowing S at 3.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Well Casing Material	PVC				
Static Water Level (ft-bmp)	5.13	Total Depth (ft-bmp)	17.46	Water Column (ft)	12.33
Gallons in Well	2				
Purge Start	09:23	Pump Intake (ft-bmp)	15	Purge Method	Low-Flow
Purge Equipment	Peristaltic				
Purge End	10:50	Volumes Purged	1.25	Sample ID	MWF16-07_GW-120523
Sampled by	Garrett Link				
Sample Time	10:45	Gallons Purged	2.50	Replicate/ Code No.	MWF16-07_GW-120523
Sample Type	Grab				

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:27	0	0	145	5.92	--	6.4	1.11	5.47	0.58	10.5	9.9	--	--
09:32	5	5	145	6.46	--	6.38	1.11	5.04	0.31	10.6	-1.5	--	--
09:37	5	10	120	6.96	--	6.39	1.08	6.62	0.45	10.4	-7	--	--
09:42	5	15	120	7.48	--	6.39	1.07	8.01	0.19	10.4	-10.4	--	--
09:47	5	20	120	7.85	--	6.4	1.04	11.4	0.16	10.5	-12.4	--	--
09:52	5	25	120	7.96	--	6.39	1	18.8	0.16	10.8	-13.2	--	--
09:57	5	30	115	8.10	--	6.41	0.9	26.8	0.16	10.7	-11.7	--	--
10:02	5	35	100	8.22	--	6.39	0.575	29.2	0.14	10.2	-12.3	--	--
10:07	5	40	100	8.36	--	6.43	0.488	27.7	0.14	10	-11.1	--	--
10:12	5	45	100	8.47	--	6.39	0.43	25.2	0.14	10	-9	--	--
10:17	5	50	100	8.61	--	6.4	0.4	23.4	0.14	9.9	-7.3	--	--
10:22	5	55	100	8.74	--	6.39	0.413	25.3	0.14	10	-6.6	--	--
10:27	5	60	100	8.90	--	6.38	0.397	20.1	0.12	10.4	-6.1	--	--
10:32	5	65	100	9.02	--	6.37	0.392	18.9	0.11	10.5	-6.2	--	--
10:37	5	70	100	9.15	--	6.35	0.386	20.9	0.11	10.6	-6.5	--	--
10:42	5	75	100	9.26	--	6.34	0.385	16.9	0.11	10.5	-6.8	Clear	Mild

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	9	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Powerhouse

Well Locked at Arrival: yes

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Condition of Well: Good condition

Well Locked at Departure: yes

Well Completion: Flush mount

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-12	Date	11/28/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	24.1 degrees F and Mostly Clear.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	13.94	Total Depth (ft-bmp)	18.95	Water Column (ft)	5.01
Purge Start	12:59	Pump Intake (ft-bmp)	16.95	Purge Method	Low-Flow
Purge End	13:50	Volumes Purged		Sample ID	MWF16-12-GW_112923
Sample Time	11:20	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.81
				Purge Equipment	Submersible
				Sampled by	Samantha Szpaichler
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:02	0	0	130	13.94	--	8.23	0.197	111	12.72	7.5	142.7	--	--
13:07	5	5	130	14.50	--	8.2	0.191	73.9	1.19	7.5	130.6	--	--
13:12	5	10	130	16.80	--	8.05	0.189	68.9	1.41	7.5	119.4	--	--
13:17	5	15	110	17.10	--	8.25	0.187	90.2	1.53	7.3	110.4	--	--
13:22	5	20	110	17.49	--	8.39	0.186	80.5	1.41	6.8	107.1	--	--
13:27	5	25	110	18.02	--	8.24	0.184	140	0.6	7.2	100.9	--	--
13:32	5	30	110	18.10	--	8.17	0.184	125	0.59	6.6	97.6	--	--
13:37	5	35	110	18.43	--	8.3	0.184	105	0.95	7.2	94.3	--	--
13:42	5	40	110	18.71	--	8.37	0.198		0.96	7.2	90	--	--
13:47	5	45	110	18.90	--	8.25	0.196	150	11	6.4	83.3	Turbid, cloudy	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments: Parking lot was re-graveled and graveled over well, barrel cone was pushed away and 5 gallon bucket full of rock was crushed when snow was plowed.
Placed barrel cone over well when left.

When sampling, at 20 minutes, needed to lower tubing.lowered tubing again at 1:30. At 1:40 lowered to bottom of well. Went dry at 1:46 pm. Kept tubing in well, will come back tomorrow to sample.

Came back to well on 11/29/23: barrel cone and 5 gallons bucket was moved off of well upon arrival.
Well still intact.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL parking lot Well Locked at Arrival: yes

Condition of Well: Missing bolts Well Locked at Departure: yes

Well Completion: Flush mount Key Number To Well: NA

ft-bmp = feet below measuring point mS/cm = milliSiemens per centimeter mV = millivolts
in = inches NTU = Nephelometric Turbidity Unit °F = degrees Fahrenheit
ft = feet mg/L = milligrams per liter °C = degrees Celsius
mL/min = milliliters per minute

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-15	Date	12/04/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	34.0 degrees F and Fog/Mist. The wind is blowing NW at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.12	Total Depth (ft-bmp)	35.49	Water Column (ft)	13.37
Purge Start	10:01	Pump Intake (ft-bmp)	33	Purge Method	Low-Flow
Purge End	11:09	Volumes Purged	1.15	Sample ID	MWF16-15_GW-120423
Sample Time	11:05	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	2.17
				Purge Equipment	Peristaltic
				Sampled by	Garrett Link
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:04	0	0	125	22.13	--	7.38	1.34	0.26	0.56	11.4	180.1	--	--
10:09	5	5	125	22.13	--	7.29	1.31	0.72	0.35	12.1	159.8	--	--
10:14	5	10	125	22.13	--	7.33	1.23	1.14	0.34	12.4	144.4	--	--
10:19	5	15	125	22.13	--	7.33	1.15	0.84	0.21	12.5	131.2	--	--
10:24	5	20	125	22.13	--	7.34	1.12	0.48	0.26	12.5	123.5	--	--
10:29	5	25	125	22.12	--	7.34	1.11	0.34	0.49	12.5	114.1	--	--
10:34	5	30	125	22.12	--	7.32	1.11	0.02	0.2	12.5	105.2	--	--
10:39	5	35	175	22.12	--	7.33	1.1	0.89	0.18	12.6	99.7	--	--
10:44	5	40	175	22.12	--	7.34	1.1	0.24	0.19	12.6	93.4	--	--
10:49	5	45	175	22.12	--	7.33	1.1	0.02	0.19	12.5	71.9	--	--
10:54	5	50	175	22.12	--	7.32	1.1	0.02	0.17	12.7	74.4	--	--
10:59	5	55	175	22.12	--	7.35	1.09	0.15	0.17	12.7	72.8	--	--
11:04	5	60	175	22.12	--	7.3	1.09	0.02	0.17	12.7	70.1	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Powerhouse	Well Locked at Arrival: yes
Condition of Well:	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-16	Date	11/28/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	24.1 degrees F and Mostly Clear.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.65	Total Depth (ft-bmp)	31.25	Water Column (ft)	8.6
Purge Start	13:11	Pump Intake (ft-bmp)	28.75	Purge Method	Low-Flow
Purge End	13:59	Volumes Purged	1.79	Sample ID	MWF16-16_GW-112823
Sample Time	13:57	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.4
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:13	0	0	125	22.65	--	7.44	0.93	4.86	1.8	11.7	63.1	--	--
13:18	5	5	125	22.65	--	7.48	0.93	3.74	0.8	11.8	61.2	--	--
13:23	5	10	125	22.65	--	7.54	0.9	3.24	0.56	11.9	57.1	--	--
13:28	5	15	125	22.65	--	7.55	0.85	2.76	0.49	12.2	56.1	--	--
13:33	5	20	125	22.65	--	7.55	0.84	2.2	0.73	12.7	56.1	--	--
13:38	5	25	125	22.65	--	7.51	0.81	1.79	0.97	11.9	54.9	--	--
13:43	5	30	125	22.65	--	7.52	0.81	1.25	0.65	12	53.7	--	--
13:48	5	35	125	22.65	--	7.52	0.81	0.88	0.64	12.1	53.4	--	--
13:53	5	40	125	22.65	--	7.51	0.8	0.7	0.7	11.9	53.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL

Well Locked at Arrival:

Condition of Well: Good condition,Missing bolts

Well Locked at Departure:

Well Completion: Flush mount

Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-17	Date	11/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	28.9 degrees F and Partly Cloudy. The wind is blowing SW at 6.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	20.17	Total Depth (ft-bmp)	31.81	Water Column (ft)	11.64
Purge Start	13:31	Pump Intake (ft-bmp)	29.81	Purge Method	Low-Flow
Purge End	14:51	Volumes Purged		Sample ID	MWF16-17-GW_112923
Sample Time	14:48	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.89
				Purge Equipment	Submersible
				Sampled by	Samantha Szpaichler
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:33	0	0	110	20.16	--	7.24	0.72	12.9	4.7	9.5	34.4	--	--
13:38	5	5	110	20.16	--	7.35	0.707	10.3	3.18	9.5	33.7	--	--
13:43	5	10	110	20.16	--	7.24	0.699	10.8	2.42	9.2	32.2	--	--
13:48	5	15	110	20.16	--	7.19	0.692	11.5	2.36	9.2	31.7	--	--
13:53	5	20	110	20.16	--	7.17	0.678	10.9	3.2	9.5	28.6	--	--
13:58	5	25	110	20.16	--	7.18	0.678	12.1	3.31	9.6	29.4	--	--
14:03	5	30	110	20.16	--	7.19	0.68	9.14	1.98	9.5	28.8	--	--
14:08	5	35	110	20.16	--	7.2	0.678	7.13	2.38	9.7	28	--	--
14:13	5	40	110	20.16	--	7.22	0.677	7.13	1.7	9.7	26.7	--	--
14:18	5	45	110	20.16	--	7.16	0.679	7.2	1.6	9.7	26.3	--	--
14:23	5	50	110	20.16	--	7.21	0.675	5.95	1.57	9.5	25	--	--
14:28	5	55	110	20.16	--	7.25	0.675	4.6	1.07	9.6	24.7	--	--
14:33	5	60	110	20.16	--	7.2	0.673	4.8	1.04	9.7	23.4	--	--
14:38	5	65	110	20.16	--	7.23	0.673	4.43	0.96	9.6	22.4	--	--
14:43	5	70	110	20.16	--	7.22	0.674	4.2	0.95	9.6	22.7	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL, NE

Well Locked at Arrival: yes

Condition of Well: Good condition

Well Locked at Departure: yes

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Well Completion: Flush mount

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-18	Date	11/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	25.0 degrees F and Cloudy. The wind is blowing S/SW at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.04	Total Depth (ft-bmp)	31.98	Water Column (ft)	10.94
Purge Start	11:52	Pump Intake (ft-bmp)	29.98	Purge Method	Low-Flow
Purge End	12:47	Volumes Purged		Sample ID	MWF16-18-GW_112923
Sample Time	12:45	Gallons Purged	0.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.78
				Purge Equipment	Submersible
				Sampled by	Samantha Szpaichler
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:53	0	0	110	21.00	--	7.33	0.445	1.85	16.16	7.7	84.7	--	--
11:58	5	5	110	21.00	--	7.22	0.432	3.3	3.14	7.7	80.1	--	--
12:03	5	10	110	21.00	--	7.2	0.421	2.8	3.97	8.2	72.5	--	--
12:08	5	15	110	21.00	--	7.14	0.409	1.6	2.76	8.6	65.8	--	--
12:13	5	20	110	21.00	--	7.14	0.404	1.5	2.88	8.7	63.7	--	--
12:18	5	25	110	21.00	--	7.2	0.396	1.65	3.5	8.8	59.8	--	--
12:23	5	30	110	21.00	--	7.19	0.391	1.47	0.4	8.9	55.7	--	--
12:28	5	35	110	21.00	--	7.19	0.389	1.45	0.26	9	52.7	--	--
12:33	5	40	110	21.00	--	7.2	0.385	1.6	0.27	9.1	48.3	--	--
12:38	5	45	110	21.00	--	7.2	0.388	1.4	0.28	9.1	48	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL, SE	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-22	Date	11/28/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	21.9 degrees F and Mostly Clear.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	23.48	Total Depth (ft-bmp)	33.9	Water Column (ft)	10.42
Purge Start	11:55	Pump Intake (ft-bmp)	31.4	Purge Method	Low-Flow
Purge End	12:44	Volumes Purged	1.48	Sample ID	MWF16-22_GW-112823
Sample Time	12:42	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.69
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:58	0	0	200	23.48	--	7.42	0.626	21.6	2.54	12.1	89.8	--	--
12:03	5	5	125	23.48	--	7.43	0.626	23.5	1.35	12.8	75.7	--	--
12:08	5	10	125	23.48	--	7.43	0.625	17.7	1.15	11.9	69.5	--	--
12:13	5	15	125	23.48	--	7.46	0.622	16.1	1.64	12.1	63.4	--	--
12:18	5	20	125	23.48	--	7.47	0.624	14.5	1.58	12.2	59.9	--	--
12:23	5	25	125	23.48	--	7.47	0.618	12.5	1.62	12	57.9	--	--
12:28	5	30	125	23.48	--	7.49	0.614	8.29	1.97	12.2	55.1	--	--
12:33	5	35	125	23.48	--	7.5	0.613	8.24	1.95	12.1	53.8	--	--
12:38	5	40	125	23.48	--	7.51	0.609	8.03	2.01	12.2	52.5	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: GFL	Well Locked at Arrival: no
Condition of Well: Bolts missing,Good condition	Well Locked at Departure: no
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-23	Date	11/30/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	28 sunny	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	24.05	Total Depth (ft-bmp)	30.53	Water Column (ft)	6.48
Purge Start	11:26	Pump Intake (ft-bmp)	28.03	Purge Method	Low-Flow
Purge End		Volumes Purged		Sample ID	MWF16-23_GW-113023
Sample Time	12:05	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.05
				Purge Equipment	Peristaltic
				Sampled by	Alaina Pitera
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:30	0	0	--	24.05	--	7.26	0.358	27.2	2.56	12.7	53.9	--	--
11:35	5	5	--	24.05	--	7.06	0.345	21.6	1.08	12	34.2	--	--
11:40	5	10	--	24.05	--	7.22	0.339	17.6	0.85	12.5	31.2	--	--
11:45	5	15	--	24.05	--	7.06	0.334	15	0.56	12.6	33	--	--
11:50	5	20	--	24.05	--	7.15	0.332	9.5	0.37	12.6	29.1	--	--
11:55	5	25	--	24.05	--	7.23	0.333	9.4	0.36	12.6	29.9	--	--
11:55	1440	25	--	24.05	--	7.22	0.334	8.5	0.36	12.7	26.4	Clear	None

Constituent Sampled	Container	Number	Preservative
NA	NA	3	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	Well Locked at Arrival: yes
Condition of Well: Missing bolts	Well Locked at Departure: yes
Well Completion: NA	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-25	Date	11/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	28.9 degrees F and Partly Cloudy. The wind is blowing SW at 6.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.11	Total Depth (ft-bmp)	37.22	Water Column (ft)	11.11
Purge Start	14:00	Pump Intake (ft-bmp)	34.7	Purge Method	Low-Flow
Purge End	14:37	Volumes Purged	1.38	Sample ID	MWF16-25_GW-112923
Sample Time	14:35	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.81
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:02	0	0	125	26.12	--	7.43	0.604	30.2	6.82	12	22	--	--
14:07	5	5	125	26.12	--	7.39	0.622	17.4	6.37	12.1	19.3	--	--
14:12	5	10	125	26.12	--	7.39	0.627	11.8	3.76	12.4	16.9	--	--
14:17	5	15	125	26.12	--	7.38	0.63	9.55	3.65	12.6	15.8	--	--
14:22	5	20	125	26.12	--	7.38	0.632	8.41	3.54	12.4	15.2	--	--
14:27	5	25	125	26.12	--	7.38	0.63	8.5	3.49	12.6	14.4	--	--
14:32	5	30	125	26.12	--	7.38	0.631	8.15	3.47	12.7	14.7	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Kennet St North ROW	Well Locked at Arrival:
Condition of Well: Good condition,Missing bolts	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWF16-25	Date	11/30/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	28 sunny	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	20.61	Total Depth (ft-bmp)	22.8	Water Column (ft)	2.19
Purge Start	12:59	Pump Intake (ft-bmp)	21	Purge Method	Low-Flow
Purge End		Volumes Purged		Sample ID	MWF16-25_GW-113023
Sample Time	14:20	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.36
				Purge Equipment	Peristaltic
				Sampled by	Alaina Pitera
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:06	0	0	--	20.61	--	8.15	0.13	592	6.87	13.3	15.7	--	--
13:11	5	5	--	20.61	--	7.57	0.432	1080	1.81	12.3	13.2	--	--
13:16	5	10	--	20.61	--	7.52	0.451	921	1.51	12.1	11.8	--	--
13:21	5	15	--	20.61	--	7.4	0.459	728	1.54	11.7	11.8	--	--
13:26	5	20	--	20.61	--	7.52	0.46	432	1.55	11.2	11.8	--	--
13:31	5	25	--	20.61	--	7.61	0.465	250	1.38	11.4	11.8	--	--
13:36	5	30	--	20.61	--	7.56	0.469	194	1.5	11.4	9.3	--	--
13:41	5	35	--	20.61	--	7.49	0.472	113	1.6	11.2	9.2	--	--
13:46	5	40	--	20.61	--	7.44	0.476	68	1.71	11.2	9.2	--	--
13:51	5	45	--	20.61	--	7.57	0.477	49	1.63	11.1	10.1	--	--
13:56	5	50	--	20.61	--	7.6	0.477	28	1.85	11.1	10.1	--	--
14:01	5	55	--	20.61	--	7.6	0.478	19	1.85	11.1	10.1	--	--
14:06	5	60	--	20.61	--	7.6	0.477	9.7	1.86	11.1	10.1	--	--
14:11	5	65	--	20.61	--	7.6	0.478	9.8	1.86	11.1	10.2	--	--
14:16	5	70	--	20.61	--	7.6	0.479	9.3	1.88	11.1	10.4	Clear	None

Constituent Sampled	Container	Number	Preservative
NA	NA	3	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: _____	Well Locked at Arrival: yes _____
Condition of Well: Missing bolts _____	Well Locked at Departure: yes _____

ft-bmp = feet below measuring point	mS/cm = milliSiemens per centimeter	mV = millivolts
in = inches	NTU = Nephelometric Turbidity Unit	°F = degrees Fahrenheit
ft = feet	mg/L = milligrams per liter	°C = degrees Celsius
mL/min = milliliters per minute		

Groundwater Sampling Form



Well Completion: NA

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWOS-08	Date	11/29/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	28.9 degrees F and Partly Cloudy. The wind is blowing SW at 6.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.07	Total Depth (ft-bmp)	28.8	Water Column (ft)	2.73
Purge Start	14:48	Pump Intake (ft-bmp)	27.2	Purge Method	Low-Flow
Purge End	15:25	Volumes Purged	5.68	Sample ID	MWOS-08_GW-112923
Sample Time	15:23	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.44
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:50	0	0	125	26.08	--	7.37	0.608	8.97	3.92	11.7	21.3	--	--
14:55	5	5	125	26.09	--	7.35	0.642	3.87	3.62	11.3	21.7	--	--
15:00	5	10	125	26.09	--	7.33	0.653	3.59	3.21	11.6	23.7	--	--
15:05	5	15	125	26.09	--	7.33	0.663	1.78	3.12	11.6	24.6	--	--
15:10	5	20	125	26.09	--	7.33	0.671	0.18	3.02	11.4	24.7	--	--
15:15	5	25	125	26.09	--	7.33	0.673	0.02	3.19	11.4	23.7	--	--
15:20	5	30	125	26.09	--	7.33	0.68	0.02	3.3	11.2	23.8	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Kennett St south ROW	Well Locked at Arrival:
Condition of Well: Good condition,Missing bolts	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWOS-09R	Date	11/30/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	27.0 degrees F and Fog. The wind is blowing S at 4.7 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	27.32	Total Depth (ft-bmp)	32.21	Water Column (ft)	4.89
Purge Start	09:46	Pump Intake (ft-bmp)	29.7	Purge Method	Low-Flow
Purge End	10:27	Volumes Purged	3.16	Sample ID	MWOS-09R_GW-113023
Sample Time	10:23	Gallons Purged	2.50	Replicate/ Code No.	DUP-03_GW-113023
				Well Casing Material	PVC
				Gallons in Well	0.79
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:50	0	0	125	27.32	--	7.35	0.8	15.4	8.98	10.2	98.3	--	--
09:55	5	5	125	27.32	--	7.33	0.82	15.9	8.03	9.3	80.9	--	--
10:00	5	10	125	27.32	--	7.32	0.82	11.1	7.48	9.9	72.4	--	--
10:05	5	15	125	27.32	--	7.32	0.83	5.71	7.42	9.9	68.9	--	--
10:10	5	20	125	27.32	--	7.32	0.83	4.65	7.02	10.2	66.5	--	--
10:15	5	25	125	27.32	--	7.32	0.83	4.58	6.77	10.3	65.1	--	--
10:20	5	30	125	27.32	--	7.32	0.84	4.71	6.58	10.3	64.3	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Western Sidewalk	Well Locked at Arrival:
Condition of Well: Good condition	Well Locked at Departure:
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	MWOS-10	Date	11/30/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	27.0 degrees F and Fog. The wind is blowing S at 4.7 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	28.50	Total Depth (ft-bmp)	32.79	Water Column (ft)	4.29
Purge Start	10:39	Pump Intake (ft-bmp)	30.2	Purge Method	Low-Flow
Purge End	11:24	Volumes Purged	3.57	Sample ID	MWOS-10_GW-113023
Sample Time	11:22	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.7
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:43	0	0	125	28.50	--	7.51	0.421	52.3	9.02	7.4	76.7	--	--
10:48	5	5	125	28.50	--	7.41	0.88	44.1	8.54	9.3	75.5	--	--
10:53	5	10	125	28.50	--	7.39	0.9	29.3	8.45	9.3	75.3	--	--
10:58	5	15	125	28.50	--	7.39	0.92	22.6	8.25	9.7	76.2	--	--
11:03	5	20	125	28.50	--	7.39	0.92	16.3	7.84	10	76.5	--	--
11:08	5	25	125	28.50	--	7.38	0.94	8.5	7.58	10.4	76.9	--	--
11:13	5	30	125	28.50	--	7.38	0.94	8.73	7.3	10.5	76.6	--	--
11:18	5	35	125	28.50	--	7.37	0.95	8.28	7.24	10.5	76.4	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Western sidewalk of St. Clair	Well Locked at Arrival: _____
Condition of Well: Good condition	Well Locked at Departure: _____
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
 in = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	TW-12-22	Date	11/30/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	46.0 degrees F and Mostly Cloudy.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	1
Static Water Level (ft-bmp)	23.05	Total Depth (ft-bmp)	32.69	Water Column (ft)	9.64
Purge Start	13:55	Pump Intake (ft-bmp)	30.1	Purge Method	Low-Flow
Purge End	15:32	Volumes Purged	6.41	Sample ID	TW-12-22_GW-113023
Sample Time	15:30	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.39
				Purge Equipment	Peristaltic
				Sampled by	Sommer Guy
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:56	0	0	125	23.05	--	8.7	31.02	643	8.85	13	157.2	--	--
14:01	5	5	125	23.05	--	8.98	22.01	386	9.13	13	136.5	--	--
14:06	5	10	125	23.05	--	8.93	16.28	227	9.02	12.9	131.9	--	--
14:11	5	15	125	23.05	--	8.93	13.22	212	8.85	12.8	124.8	--	--
14:16	5	20	125	23.05	--	8.92	11.58	159	8.72	12.8	121.3	--	--
14:21	5	25	125	23.05	--	8.87	10.2	127	8.63	12.7	120.3	--	--
14:26	5	30	125	23.05	--	8.85	9.14	96.2	8.49	12.7	117.8	--	--
14:31	5	35	125	23.05	--	8.82	8.5	86.8	8.28	12.6	117	--	--
14:36	5	40	125	23.05	--	8.79	8.1	77.4	8.17	12.5	116.2	--	--
14:41	5	45	125	23.05	--	8.78	7.61	61	7.95	12.6	113.9	--	--
14:46	5	50	125	23.05	--	7.79	7.11	55.7	7.78	12.6	110.3	--	--
14:51	5	55	125	23.05	--	8.74	6.83	53.4	7.63	12.6	112.2	--	--
14:56	5	60	125	23.05	--	8.73	6.58	48.5	8.15	12.6	112.6	--	--
15:01	5	65	125	23.05	--	8.72	6.26	38.7	7.33	12.6	111.2	--	--
15:06	5	70	125	23.05	--	8.7	5.98	36.8	7.13	12.6	110.4	--	--
15:11	5	75	125	23.05	--	8.72	5.7	32	6.98	12.6	108.3	--	--
15:16	5	80	125	23.05	--	8.7	5.46	31.1	6.85	12.6	106.9	--	--
15:21	5	85	125	23.05	--	8.71	5.15	27.1	6.69	12.6	106.6	--	--
15:26	5	90	125	23.05	--	8.73	4.64	24.6	6.51	12.9	104.8	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs SW-846 8260B	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	GFL	Well Locked at Arrival:	
Condition of Well:	Good condition	Well Locked at Departure:	
Well Completion:	Flush mount	Key Number To Well:	NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form



Project Number	30167840	Well ID	UNKNOWN-01	Date	12/04/2023
Project Name/Location	RACER Pontiac North Campus 2023		Weather(°F)	34.0 degrees F and Fog/Mist. The wind is blowing NW at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	18.72	Total Depth (ft-bmp)	24.09	Water Column (ft)	5.37
Purge Start	11:29	Pump Intake (ft-bmp)	21.5	Purge Method	Low-Flow
Purge End	12:27	Volumes Purged	2.30	Sample ID	UNKNOWN-01_GW-120423
Sample Time	12:20	Gallons Purged	2.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.87
				Purge Equipment	Peristaltic
				Sampled by	Garrett Link
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:32	0	0	130	18.83	--	7.19	1.33	1.09	2.4	11.7	54.3	--	--
11:37	5	5	130	18.84	--	7.12	1.36	0.02	1.61	12.1	60.6	--	--
11:42	5	10	130	18.84	--	7.12	1.33	0.02	1.34	12.1	59	--	--
11:47	5	15	130	18.85	--	7.12	1.3	0.02	1.25	12	53.5	--	--
11:52	5	20	130	18.85	--	7.15	1.28	0.02	1.18	12.2	50.3	--	--
11:57	5	25	130	18.85	--	7.14	1.27	0.02	1.08	12.4	46.2	--	--
12:02	5	30	130	18.85	--	7.12	1.25	0.02	1	12.3	43.3	--	--
12:07	5	35	130	18.85	--	7.13	1.24	0.02	1.02	11.9	40.3	--	--
12:12	5	40	130	18.85	--	7.13	1.22	0.02	0.98	11.8	35.8	--	--
12:17	5	45	130	18.85	--	7.14	1.21	0.02	0.99	11.9	33.7	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Powerhouse	Well Locked at Arrival: no
Condition of Well: Good condition	Well Locked at Departure: no
Well Completion: Flush mount	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius



Soil Vapor Collection Log Sheet

Office Name & Address (Reporting Information): Novi, MI 28550 Cabot Dr #500									Project Name: RACER Pontiac North Campus 2023						
Field Manager: Alexis Crisp									Project Number: 30167840						
Phone: 937-206-4005			Special Instructions: TO-15						Site Address: 200 E Montcalm Pontiac MI 48340 US						
Email Address for Result Reporting:									Sampler Name: Sommer Guy				Phone Number: 947-465-3421		
Alexis.crisp@arcadis.com									Email: Alexis.crisp@arcadis.com						
Helium Detector Used: MGD-2002					Helium Leak Method: Helium Tracer Test				Summa Canister Size (1L, 2.7 L, 6L): 1 L					Lab: Eurofins	
Sample ID	Sample Location Description	Date	Leak/Tracer Test completed prior to sample collection						Canister Number	Flow Controller Number	Sample Collection Start Time	Beginning Canister Pressure (in. Hg)	Sample Collection End Time	Ending Canister Pressure (in. Hg)	Notes
			Shut in Test Pass/Fail?	Purge Reading (ppm)	Shroud Helium Concentration (%)	Helium Test Pass/Fail?	Purge Volume (mL)	Purge Rate (mL/min)							
DUP-01_SG-112723	St. Clair Eastern ROW	11/27/2023	Pass	15700	44.3	Pass	321.45001	100	3405	23568	11:36	-28	11:44	-5	N/A
SV-01-21_SG-112723	St. Clair Eastern ROW	11/27/2023	Pass	0	45.9	Pass	200.91	100	2319	23346	11:57	-28	12:03	-5	N/A
SV-02-21_SG-112723	St. Clair Eastern ROW	11/27/2023	Pass	15700	44.3	Pass	321.45001	100	4575	23724	11:36	-28.5	11:44	-5	N/A
SV-03-21_SG-112723	St. Clair Western ROW	11/27/2023	Pass	0	61.7	Pass	160.74	100	C349	23831	13:34	-28	13:41	-5	N/A
SV-04-21_SG-112723	St. Clair Western ROW	11/27/2023	Pass	0	46.2	Pass	308.04001	100	4501	23661	13:17	-28	13:28	-5	N/A
SV-05-21_SG-112723	St. Clair Western ROW	11/27/2023	Pass	0	58.8	Pass	174.12	100	4366	23436	12:44	-28.5	12:52	-5	N/A
SV-06-21_SG-112723	St. Clair Western ROW	11/27/2023	Pass	0	42	Pass	308.04001	100	4592	23785	12:27	-28	12:35	-5	N/A

Meteorological Data							General Notes or Observations
Date	Time	Temp		Relative Humidity (%)	Barometric Pressure (in.Hg)	Weather source	
		Indoor	Outdoor				
11/27/2023	10:53		28	65	30	28.0 degrees F and Cloudy.	N/A

Air Parameters (completed after sample collection)					
Location ID	CH4 %	CH4 LEL %	O2 %	PID (ppm)	Differential Pressure (in. Water Column)
--	0	NM	16.2	NM	NM
SV-01-21	0	NM	17.5	NM	NM
SV-02-21	0	NM	16.2	NM	NM
SV-03-21	0	NM	15.4	NM	NM
SV-04-21	0	NM	12.7	NM	NM
SV-05-21	0	NM	9.5	NM	NM
SV-06-21	0	NM	13.5	NM	NM

Appendix C

Former Fiero Assembly Site-Specific Criteria Evaluation

DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

INTEROFFICE COMMUNICATION

TO: Joe Rogers, Geologist Specialist, MMD

FROM: Shane Morrison, Senior Toxicologist, RRD

DATE: April 21, 2020

SUBJECT: Former Fiero Assembly Site-Specific Criteria Evaluation

The following site-specific volatilization to indoor air criteria (VIAC) are the Michigan Department of Environment, Great Lakes, and Energy's (EGLE's) determination of values that reflect best available information regarding the toxicity and exposure risks posed by the hazardous substances present at the facility. These values are based upon the information provided with the request to develop site-specific VIAC for this facility. These values may be used provided it is documented that the conditions used to develop the site-specific criteria are met at the facility. Other values may be developed by a person consistent with the statutory provisions for development of site-specific criteria and provided for EGLE review and approval.

Correspondence transmitting these values to the submitter/consultant as part of a report, review, or other request must incorporate the appropriate sections of the volatilization to indoor air pathway (VIAP) model document language. As indicated in this document, when groundwater volatilization to indoor air inhalation criteria (GVIIC) and soil volatilization to indoor air inhalation criteria (SVIIC) are not applicable, the correspondence must include language indicating the requirement to satisfy the site-specific VIAC for all three media i.e., groundwater, soil, and soil gas. In addition, all of the following site-specific VIAC tables must be copied into the correspondence or letter as part of your response to the submitter/consultant.

Unrestricted residential site-specific criteria were included in the evaluation based on information provided and EGLE's residential conceptual site model. Exceedance of the site-specific unrestricted residential criteria will require restrictions or institutional controls for closure or aid in the determination of off-site migration.

The nonresidential building size of $\leq 50,000$ ft² is based on continuously open space and refers to the structure or portion of the structure that may be subdivided (e.g. offices, breakrooms, etc.). If a structure contains areas with both $\leq 50,000$ ft² continuously open space, a sensitivity analysis must be performed to identify the most restrictive set of criteria to evaluate risk associated with the VIAP for that structure.

If multiple foundation types are present for a structure (i.e. slab-on-grade and basement), a sensitivity analysis must be performed to identify the most restrictive set of criteria to evaluate risk associated with the VIAP for that structure.

The site-specific criteria were generated using the United States Department of Agriculture (USDA) soil type of sand. Other site-specific criteria can be generated using a different soil type by providing soil characterization results from department approved methods on soils collected at the site.

Additional hazardous substances were included in the site-specific evaluation that were not explicitly requested. These hazardous substances may be components of recent petroleum releases and the primary breakdown products of tetrachloroethylene. The preemptive site-specific evaluation of these substances was provided to limit the potential need for future resubmittal for this facility.

Please contact me at MorrisonS5@michigan.gov or 517-284-5063 if you require any clarification of these comments and criterion or have additional questions.

cc: Eric Wildfang, Toxicology Unit Supervisor, RRD

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure < 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
83329	Acenaphthene	3,900 (S) sol	7.2E+06 nc	21,000 nc
208968	Acenaphthylene	1,400 (CC) nc	DATA	21,000 nc
75070	Acetaldehyde	95,000 nc	1,200 (M) nc	920 nc
64197	Acetic acid	1.0E+09 (S) sol	2.3E+07 nc	26,000 nc
67641	Acetone (#)	2.4E+08 (EE) st	3.1E+06 (EE) st	1.0E+06 (EE) st
75058	Acetonitrile	1.3E+06 nc	22,000 nc	6,100 nc
98862	Acetophenone	6.1E+06 (S) (DD) sol	7.4E+06 (C) (DD) dev (8.4E+05)	1.1E+05 (DD) dev
107028	Acrolein	140 nc	1.6 (M) nc	2.0 nc
79107	Acrylic acid	6.1E+05 nc	9,200 nc	20 nc
107131	Acrylonitrile	4,100 ca	67 (M) ca	59 ca
309002	Aldrin	17 (S) sol	29,000 ca	0.81 ca
7664417	Ammonia (#)	9.1E+06 (EE) st	DATA	40,000 (EE) st
994058	t-Amyl methyl ether (TAME)	73,000 nc	1,200 nc	6,300 nc
120127	Anthracene	43 (S) sol	4.4E+08 nc	1.0E+05 nc
103333	Azobenzene	46 (CC) ca	DATA	130 ca
71432	Benzene	1,100 ca	94 ca	510 ca
56553	Benzo(a)anthracene	9.4 (S) sol	2.2E+07 ca	66 ca
100447	Benzyl chloride	3,600 ca	670 ca	80 ca
111444	bis-2-Chloroethylether	7,900 ca	190 ca	12 ca
108861	Bromobenzene	66,000 nc	5,600 nc	6,100 nc
75274	Bromodichloromethane	1,700 nc	31 (M) nc	200 nc
75252	Bromoform	2.0E+05 ca	2,500 ca	3,600 ca
74839	Bromomethane	1,200 nc	32 (M) nc	1,000 nc
71363	n-Butanol	4.9E+07 nc	7.0E+05 nc	36,000 nc
78933	2-Butanone (MEK)	5.9E+07 (DD) dev	7.4E+05 (DD) dev	3.3E+05 (DD) dev

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure < 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
123864	n-Butyl acetate	2.6E+06 nc	38,000 nc	41,000 nc
75650	t-Butyl alcohol	8.7E+06 nc	1.1E+05 nc	7,400 nc
104518	n-Butylbenzene	12,000 (S) sol	20,000 nc	20,000 nc
135988	sec-Butylbenzene	18,000 (S) sol	1.3E+05 (C) nc (49,000)	41 nc
98066	t-Butylbenzene	67 nc	23 (M) nc	41 nc
79925	Camphene	920 nc	490 nc	8,200 nc
75150	Carbon disulfide	46,000 nc	1,800 nc	72,000 nc
56235	Carbon tetrachloride	440 ca	17 (M) ca	710 ca
57749	Chlordane	56 (S) (EE) sol	4.3E+05 (EE) st	19 (EE) st
108907	Chlorobenzene	27,000 nc	2,900 nc	5,100 nc
75683	1-Chloro-1,1-difluoroethane	8.7E+05 nc	84,000 nc	5.1E+06 nc
75003	Chloroethane	3.2E+05 nc	12,000 nc	4.1E+05 nc
110758	2-Chloroethyl vinyl ether	TX	TX	TX
67663	Chloroform	610 ca	15 (M) ca	170 ca
74873	Chloromethane	7,400 nc	240 (M) nc	9,200 nc
91587	beta-Chloronaphthalene	TX	TX	TX
95578	2-Chlorophenol	1.5E+06 (DD) dev	2.8E+05 (DD) dev	1,200 (DD) dev
95498	o-Chlorotoluene	46,000 nc	7,000 nc	8,200 nc
74908	Cyanide, Hydrogen	3,700 nc	63 (M) nc	82 nc
110827	Cyclohexane	53,000 nc	11,000 nc	6.1E+05 nc
108941	Cyclohexanone	2.5E+07 (S) sol	2.4E+06 (C) nc (1.7E+06)	72,000 nc
72559	4-4'-DDE	40 (S) sol	2.2E+06 ca	41 ca
117840	Di-n-octyl phthalate	22 (S) (CC) sol	DATA	48,000 nc
123422	Diacetone alcohol	1.0E+09 (S) sol	1.8E+08 (C) nc (3.5E+07)	2.5E+05 nc
132649	Dibenzofuran	3,100 (S) sol	2.5E+08 nc	410 nc

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure < 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
124481	Dibromochloromethane	4,400 ca	55 (M) ca	170 ca
96128	Dibromochloropropane	4.2E-02 (M) (CC) ca	DATA	0.71 ca
74953	Dibromomethane	9,000 nc	120 (M) nc	410 nc
95501	1,2-Dichlorobenzene	1.6E+05 (S) sol	52,000 nc	31,000 nc
541731	1,3-Dichlorobenzene	2,700 nc	360 nc	310 nc
106467	1,4-Dichlorobenzene	9,800 ca	1,300 ca	1,000 ca
75718	Dichlorodifluoromethane	1,400 nc	440 nc	34,000 nc
75343	1,1-Dichloroethane	5,300 ca	150 ca	2,500 ca
107062	1,2-Dichloroethane	1,600 ca	46 (M) ca	150 ca
75354	1,1-Dichloroethylene	8,300 nc	430 nc	20,000 nc
156592	cis-1,2-Dichloroethylene	2,300 nc	74 nc	820 nc
156605	trans-1,2-Dichloroethylene	9,800 nc	420 nc	8,200 nc
78875	1,2-Dichloropropane	2,100 nc	74 nc	410 nc
542756	1,3-Dichloropropene	4,200 (J) ca	170 (J) ca	1000 (J) ca
60571	Dieldrin	200 (S) sol	43,000 ca	0.87 ca
60297	Diethyl ether	9.0E+05 nc	12,000 nc	1.0E+05 nc
108203	Diisopropyl ether	2.7E+05 (DD) dev	4,700 (DD) dev	47,000 (DD) dev
108189	Diisopropylamine	2.8E+06 nc	1.0E+05 nc	20,000 nc
127195	N,N-Dimethylacetamide	1.0E+09 (S) sol	1.4E+08 (C) nc (3.9E+07)	10,000 nc
121697	N,N-Dimethylaniline	1.4E+05 ca	6,600 ca	330 ca
68122	Dimethylformamide	1.0E+08 nc	1.6E+06 nc	720 nc
123911	1,4-Dioxane	1.5E+06 ca	21,000 ca	800 ca
115297	Endosulfan	TX	TX	TX
106898	Epichlorohydrin	38,000 nc	660 nc	100 nc
64175	Ethanol (#)	1.0E+09 (S) (EE) sol	1.6E+07 (EE) st	6.3E+05 (EE) st

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure < 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
141786	Ethyl acetate	6.4E+05 nc	7,300 nc	7,200 nc
637923	Ethyl-tert-butyl ether (ETBE)	1,200 (CC) nc	DATA	38,000 nc
100414	Ethylbenzene	3,600 ca	680 ca	1,600 ca
106934	Ethylene dibromide	250 ca	4.2 (M) ca	6.6 ca
86737	Fluorene	1,700 (S) sol	1.7E+07 nc	14,000 nc
50000	Formaldehyde	3.6E+06 ca	73,000 ca	310 ca
64186	Formic acid	8.8E+05 nc	16,000 (M) nc	31 nc
76448	Heptachlor	180 (S) sol	2.0E+05 ca	3.1 ca
1024573	Heptachlor epoxide	0.40 (CC) ca	DATA	1.5 ca
142825	n-Heptane	3,400 (S) (GW) sol	4,600 nc	3.6E+05 nc
87821	Hexabromobenzene	TX	TX	TX
118741	Hexachlorobenzene (C-66)	6.2 (S) sol	240 (M) nc	3.6 nc
87683	Hexachlorobutadiene (C-46)	890 ca	140 ca	180 ca
77474	Hexachlorocyclopentadiene (C-56)	43 nc	11 (M) nc	20 nc
67721	Hexachloroethane	3,900 ca	180 (M) ca	400 ca
110543	n-Hexane	2,000 (GW) nc	890 nc	72,000 nc
591786	2-Hexanone	4.9E+05 nc	7,600 nc	3,100 nc
78831	Isobutyl alcohol	8.5E+07 (S) sol	2.8E+06 nc	1.5E+05 nc
67630	Isopropyl alcohol	2.5E+07 nc	3.5E+05 nc	20,000 nc
98828	Isopropyl benzene	810 ca	210 (M) ca	380 ca
58899	Lindane	TX	TX	TX
Varies	Mercury (Total)	60 (S) sol	790 nc	31 nc
74828	Methane	10,000 (AA)	DATA	8.4E+06 (GG)
67561	Methanol	1.0E+09 (S) (DD) sol	3.3E+07 (DD) dev	1.3E+06 (DD) dev
109864	2-Methoxyethanol	3.8E+06 nc	53,000 nc	110 nc

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure < 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
109024	N-Methyl-morpholine	TX	TX	TX
108101	4-Methyl-2-pentanone (MIBK)	1.9E+07 (S) (DD) sol	2.9E+05 (DD) dev	2.0E+05 (DD) dev
1634044	Methyl-tert-butyl ether (MTBE)	3.2E+05 ca	4,200 ca	15,000 ca
96377	Methylcyclopentane	2,500 nc	1,000 (M) nc	72,000 nc
75092	Methylene chloride	1.9E+05 nc	4,600 nc	61,000 nc
91576	2-Methylnaphthalene	25,000 (S) sol	60,000 nc	1,000 nc
2385855	Mirex	TX	TX	TX
91203	Naphthalene	6,200 ca	3,800 ca	120 ca
98953	Nitrobenzene	69,000 ca	9,600 ca	100 ca
88755	2-Nitrophenol	1.4 (M) (CC) nc	DATA	5.1 nc
608935	Pentachlorobenzene	0.36 (M) (CC) nc	DATA	10 nc
82688	Pentachloronitrobenzene	170 (CC) nc	DATA	1,100 nc
109660	Pentane	2,700 (GW) nc	1,300 (M) nc	1.0E+05 nc
109682	2-Pentene	TX	TX	TX
335671	Perfluorooctanoic acid	TX	TX	TX
85018	Phenanthrene	1,200 (S) sol	58,000 nc	10 nc
110894	Piperidine	1.0E+09 (S) sol	7.4E+07 nc	7.2E+05 nc
1336363	Polychlorinated biphenyls (PCBs)	1.9 (CC) (J) ca	DATA	40 (J) ca
79094	Propionic acid	5.5E+08 nc	7.9E+06 nc	31,000 nc
71238	Propyl alcohol	6.7E+07 (DD) dev	9.7E+05 (DD) dev	49,000 (DD) dev
103651	n-Propylbenzene (#)	52,000 (S) (DD) sol	21,000 (DD) dev	33,000 (DD) dev
129000	Pyrene	140 (S) sol	8.8E+08 nc	10,000 nc
110861	Pyridine	3.0E+05 nc	19,000 nc	360 nc
100425	Styrene	45,000 ca	8,600 ca	7,000 ca
95943	1,2,4,5-Tetrachlorobenzene	600 (S) sol	2,500 nc	100 nc

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure < 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
630206	1,1,1,2-Tetrachloroethane	5,700 ca	180 ca	540 ca
79345	1,1,2,2-Tetrachloroethane	4,100 ca	150 ca	69 ca
127184	Tetrachloroethylene	3,400 (EE) st	150 (EE) st	2,700 (EE) st
109999	Tetrahydrofuran	2.7E+07 nc	4.5E+05 nc	2.0E+05 nc
632224	1,1,3,3-Tetramethylurea	31,000 (CC) nc	DATA	82 nc
509148	Tetranitromethane	36 (M) ca	4.3 (M) ca	0.27 ca
108883	Toluene	5.3E+05 (S) (EE) sol	64,000 (EE) st	2.5E+05 (EE) st
2303175	Triallate	3,500 (DD) (CC) dev	DATA	6,700 (DD) dev
102829	Tributylamine	1.4E+05 (S) sol	1.2E+05 nc	720 nc
87616	1,2,3-Trichlorobenzene	18,000 (S) sol	29,000 nc	2,800 nc
120821	1,2,4-Trichlorobenzene	5,100 nc	1,900 nc	200 nc
71556	1,1,1-Trichloroethane (#)	2.1E+05 (EE) st	7,500 (EE) st	2.3E+05 (EE) st
79005	1,1,2-Trichloroethane	410 nc	13 (M) nc	20 nc
79016	Trichloroethylene	210 (DD) dev	8.0 (M) (DD) dev	130 (DD) dev
75694	Trichlorofluoromethane	6,000 nc	670 nc	45,000 nc
96184	1,2,3-Trichloropropane	1,800 nc	91 (M) nc	31 nc
76131	1,1,2-Trichloro-1,2,2-trifluoroethane	1.4E+05 nc	30,000 nc	1.9E+06 nc
1582098	Trifluralin	180 (S) (CC) sol	DATA	3.1E+05 nc
540841	2,2,4-Trimethyl pentane	2,400 (S) (GW) sol	4,500 nc	3.6E+05 nc
107404	2,4,4-Trimethyl-2-pentene	TX	TX	TX
526738	1,2,3-Trimethylbenzene	41,000 (JT) nc	9,600 (JT) nc	6,100 (JT) nc
95636	1,2,4-Trimethylbenzene	22,000 (JT) nc	5,200 (JT) nc	6,100 (JT) nc
108678	1,3,5-Trimethylbenzene	16,000 (JT) nc	3,600 (JT) nc	6,100 (JT) nc
126727	tris(2,3-Dibromopropyl)phosphate	2.5 (M) (CC) ca	DATA	7.5 ca
108054	Vinyl acetate	5.1E+05 nc	5,700 nc	20,000 nc

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are **restricted** site-specific criteria that apply to a nonresidential structure **< 50,000 ft²** with a **slab-on-grade**, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
75014	Vinyl chloride	260 ca	16 (M) ca	910 ca
1330207	Xylenes	60,000 (J) nc	9,900 (J) nc	22,000 (J) nc

Table 2. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure < 50,000 ft² with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
83329	Acenaphthene	3,900 (S) sol	4.8E+06 nc	21,000 nc
208968	Acenaphthylene	990 (CC) nc	DATA	21,000 nc
75070	Acetaldehyde	45,000 nc	800 (M) nc	920 nc
64197	Acetic acid	6.7E+08 nc	1.5E+07 nc	26,000 nc
67641	Acetone (#)	1.1E+08 (EE) st	2.1E+06 (EE) st	1.0E+06 (EE) st
75058	Acetonitrile	6.2E+05 nc	15,000 nc	6,100 nc
98862	Acetophenone	6.1E+06 (S) (DD) sol	4.9E+06 (C) (DD) dev (8.4E+05)	1.1E+05 (DD) dev
107028	Acrolein	67 nc	1.1 (M) nc	2.0 nc
79107	Acrylic acid	2.8E+05 nc	6,100 nc	20 nc
107131	Acrylonitrile	1,900 ca	45 (M) ca	59 ca
309002	Aldrin	17 (S) sol	20,000 ca	0.81 ca
7664417	Ammonia (#)	4.9E+06 (EE) st	DATA	40,000 (EE) st
994058	t-Amyl methyl ether (TAME)	33,000 nc	800 nc	6,300 nc
120127	Anthracene	43 (S) sol	2.9E+08 nc	1.0E+05 nc
103333	Azobenzene	33 (CC) ca	DATA	130 ca
71432	Benzene	510 ca	63 ca	510 ca
56553	Benzo(a)anthracene	9.4 (S) sol	1.5E+07 ca	66 ca
100447	Benzyl chloride	1,600 ca	450 ca	80 ca
111444	bis-2-Chloroethylether	3,300 ca	130 ca	12 ca
108861	Bromobenzene	29,000 nc	3,700 nc	6,100 nc
75274	Bromodichloromethane	760 nc	21 (M) nc	200 nc
75252	Bromoform	83,000 ca	1,700 ca	3,600 ca
74839	Bromomethane	580 nc	21 (M) nc	1,000 nc
71363	n-Butanol	2.2E+07 nc	4.7E+05 nc	36,000 nc
78933	2-Butanone (MEK)	2.7E+07 (DD) dev	4.9E+05 (DD) dev	3.3E+05 (DD) dev

Table 2. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure < 50,000 ft² with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
123864	n-Butyl acetate	1.2E+06 nc	25,000 nc	41,000 nc
75650	t-Butyl alcohol	3.9E+06 nc	76,000 nc	7,400 nc
104518	n-Butylbenzene	12,000 (S) sol	13,000 nc	20,000 nc
135988	sec-Butylbenzene	18,000 (S) sol	88,000 (C) nc (49,000)	41 nc
98066	t-Butylbenzene	29 nc	15 (M) nc	41 nc
79925	Camphene	410 nc	330 nc	8,200 nc
75150	Carbon disulfide	22,000 nc	1,200 nc	72,000 nc
56235	Carbon tetrachloride	190 ca	12 (M) ca	710 ca
57749	Chlordane	56 (S) (EE) sol	2.9E+05 (EE) st	19 (EE) st
108907	Chlorobenzene	12,000 nc	1,900 nc	5,100 nc
75683	1-Chloro-1,1-difluoroethane	4.0E+05 nc	56,000 nc	5.1E+06 nc
75003	Chloroethane	1.5E+05 nc	7,800 nc	4.1E+05 nc
110758	2-Chloroethyl vinyl ether	TX	TX	TX
67663	Chloroform	270 ca	9.9 (M) ca	170 ca
74873	Chloromethane	3,500 nc	160 (M) nc	9,200 nc
91587	beta-Chloronaphthalene	TX	TX	TX
95578	2-Chlorophenol	6.3E+05 (DD) dev	1.9E+05 (DD) dev	1,200 (DD) dev
95498	o-Chlorotoluene	20,000 nc	4,700 nc	8,200 nc
74908	Cyanide, Hydrogen	1,900 nc	42 (M) nc	82 nc
110827	Cyclohexane	24,000 nc	7,400 nc	6.1E+05 nc
108941	Cyclohexanone	2.5E+07 (S) sol	1.6E+06 nc	72,000 nc
72559	4-4'-DDE	40 (S) sol	1.5E+06 ca	41 ca
117840	Di-n-octyl phthalate	22 (S) (CC) sol	DATA	48,000 nc
123422	Diacetone alcohol	1.0E+09 (S) sol	1.2E+08 (C) nc (3.5E+07)	2.5E+05 nc
132649	Dibenzofuran	3,100 (S) sol	1.7E+08 nc	410 nc

Table 2. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure < 50,000 ft² with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
124481	Dibromochloromethane	1,800 ca	36 (M) ca	170 ca
96128	Dibromochloropropane	2.9E-02 (M) (CC) ca	DATA	0.71 ca
74953	Dibromomethane	3,900 nc	83 (M) nc	410 nc
95501	1,2-Dichlorobenzene	1.6E+05 (S) sol	35,000 nc	31,000 nc
541731	1,3-Dichlorobenzene	1,200 nc	240 nc	310 nc
106467	1,4-Dichlorobenzene	4,300 ca	870 ca	1,000 ca
75718	Dichlorodifluoromethane	640 nc	290 nc	34,000 nc
75343	1,1-Dichloroethane	2,400 ca	99 ca	2,500 ca
107062	1,2-Dichloroethane	750 ca	31 (M) ca	150 ca
75354	1,1-Dichloroethylene	3,800 nc	290 nc	20,000 nc
156592	cis-1,2-Dichloroethylene	1,100 nc	49 (M) nc	820 nc
156605	trans-1,2-Dichloroethylene	4,500 nc	280 nc	8,200 nc
78875	1,2-Dichloropropane	950 nc	49 (M) nc	410 nc
542756	1,3-Dichloropropene	1,900 (J) ca	120 (J) ca	1000 (J) ca
60571	Dieldrin	200 (S) sol	29,000 ca	0.87 ca
60297	Diethyl ether	4.1E+05 nc	8,300 nc	1.0E+05 nc
108203	Diisopropyl ether	1.2E+05 (DD) dev	3,100 (DD) dev	47,000 (DD) dev
108189	Diisopropylamine	1.2E+06 nc	69,000 nc	20,000 nc
127195	N,N-Dimethylacetamide	1.0E+09 (S) sol	9.0E+07 (C) nc (3.9E+07)	10,000 nc
121697	N,N-Dimethylaniline	58,000 ca	4,400 ca	330 ca
68122	Dimethylformamide	4.8E+07 nc	1.1E+06 nc	720 nc
123911	1,4-Dioxane	6.7E+05 ca	14,000 ca	800 ca
115297	Endosulfan	TX	TX	TX
106898	Epichlorohydrin	17,000 nc	440 nc	100 nc
64175	Ethanol (#)	5.0E+08 (EE) st	1.1E+07 (EE) st	6.3E+05 (EE) st

Table 2. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure < 50,000 ft² with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
141786	Ethyl acetate	2.9E+05 nc	4,900 nc	7,200 nc
637923	Ethyl-tert-butyl ether (ETBE)	780 (CC) nc	DATA	38,000 nc
100414	Ethylbenzene	1,600 ca	450 ca	1,600 ca
106934	Ethylene dibromide	110 ca	2.8 (M) ca	6.6 ca
86737	Fluorene	1,700 (S) sol	1.1E+07 nc	14,000 nc
50000	Formaldehyde	1.9E+06 ca	49,000 ca	310 ca
64186	Formic acid	4.4E+05 nc	10,000 (M) nc	31 nc
76448	Heptachlor	180 (S) sol	1.4E+05 ca	3.1 ca
1024573	Heptachlor epoxide	0.28 (CC) ca	DATA	1.5 ca
142825	n-Heptane	3,400 (S) (GW) sol	3,000 nc	3.6E+05 nc
87821	Hexabromobenzene	TX	TX	TX
118741	Hexachlorobenzene (C-66)	6.2 (S) sol	160 (M) nc	3.6 nc
87683	Hexachlorobutadiene (C-46)	370 ca	92 ca	180 ca
77474	Hexachlorocyclopentadiene (C-56)	18 (M) nc	7.5 (M) nc	20 nc
67721	Hexachloroethane	1,600 ca	120 (M) ca	400 ca
110543	n-Hexane	1,300 (GW) nc	590 nc	72,000 nc
591786	2-Hexanone	2.2E+05 nc	5,000 nc	3,100 nc
78831	Isobutyl alcohol	8.5E+07 (S) sol	1.8E+06 nc	1.5E+05 nc
67630	Isopropyl alcohol	1.1E+07 nc	2.3E+05 nc	20,000 nc
98828	Isopropyl benzene	360 ca	140 (M) ca	380 ca
58899	Lindane	TX	TX	TX
Varies	Mercury (Total)	33 nc	520 nc	31 nc
74828	Methane	10,000 (AA)	DATA	8.4E+06 (GG)
67561	Methanol	9.5E+08 (DD) dev	2.2E+07 (DD) dev	1.3E+06 (DD) dev
109864	2-Methoxyethanol	1.7E+06 nc	35,000 nc	110 nc

Table 2. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure < 50,000 ft² with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
109024	N-Methyl-morpholine	TX	TX	TX
108101	4-Methyl-2-pentanone (MIBK)	9.5E+06 (DD) dev	1.9E+05 (DD) dev	2.0E+05 (DD) dev
1634044	Methyl-tert-butyl ether (MTBE)	1.5E+05 ca	2,800 ca	15,000 ca
96377	Methylcyclopentane	1,200 nc	680 (M) nc	72,000 nc
75092	Methylene chloride	88,000 nc	3,000 nc	61,000 nc
91576	2-Methylnaphthalene	25,000 (S) sol	40,000 nc	1,000 nc
2385855	Mirex	TX	TX	TX
91203	Naphthalene	2,700 ca	2,500 ca	120 ca
98953	Nitrobenzene	29,000 ca	6,400 ca	100 ca
88755	2-Nitrophenol	1.0 (M) (CC) nc	DATA	5.1 nc
608935	Pentachlorobenzene	0.25 (M) (CC) nc	DATA	10 nc
82688	Pentachloronitrobenzene	120 (CC) nc	DATA	1,100 nc
109660	Pentane	1,800 (GW) nc	830 (M) nc	1.0E+05 nc
109682	2-Pentene	TX	TX	TX
335671	Perfluorooctanoic acid	TX	TX	TX
85018	Phenanthrene	1,200 (S) sol	39,000 nc	10 nc
110894	Piperidine	6.6E+08 nc	4.9E+07 nc	7.2E+05 nc
1336363	Polychlorinated biphenyls (PCBs)	1.3 (CC) (J) ca	DATA	40 (J) ca
79094	Propionic acid	2.5E+08 nc	5.2E+06 nc	31,000 nc
71238	Propyl alcohol	3.1E+07 (DD) dev	6.5E+05 (DD) dev	49,000 (DD) dev
103651	n-Propylbenzene (#)	31,000 (DD) dev	14,000 (DD) dev	33,000 (DD) dev
129000	Pyrene	140 (S) sol	5.9E+08 nc	10,000 nc
110861	Pyridine	1.4E+05 nc	13,000 nc	360 nc
100425	Styrene	20,000 ca	5,800 ca	7,000 ca
95943	1,2,4,5-Tetrachlorobenzene	600 (S) sol	1,600 nc	100 nc

Table 2. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure.

The following are **restricted** site-specific criteria that apply to a nonresidential structure **< 50,000 ft²** with a **basement**, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
630206	1,1,1,2-Tetrachloroethane	2,400 ca	120 ca	540 ca
79345	1,1,2,2-Tetrachloroethane	1,800 ca	100 ca	69 ca
127184	Tetrachloroethylene	1,500 (EE) st	99 (EE) st	2,700 (EE) st
109999	Tetrahydrofuran	1.2E+07 nc	3.0E+05 nc	2.0E+05 nc
632224	1,1,3,3-Tetramethylurea	23,000 (CC) nc	DATA	82 nc
509148	Tetranitromethane	15 (M) ca	2.9 (M) ca	0.27 ca
108883	Toluene	2.5E+05 (EE) st	43,000 (EE) st	2.5E+05 (EE) st
2303175	Triallate	2,500 (DD) (CC) dev	DATA	6,700 (DD) dev
102829	Tributylamine	98,000 nc	78,000 nc	720 nc
87616	1,2,3-Trichlorobenzene	18,000 (S) sol	20,000 nc	2,800 nc
120821	1,2,4-Trichlorobenzene	2,200 nc	1,200 nc	200 nc
71556	1,1,1-Trichloroethane (#)	92,000 (EE) st	5,000 (EE) st	2.3E+05 (EE) st
79005	1,1,2-Trichloroethane	180 nc	8.7 (M) nc	20 nc
79016	Trichloroethylene	93 (DD) dev	5.3 (M) (DD) dev	130 (DD) dev
75694	Trichlorofluoromethane	2,700 nc	450 nc	45,000 nc
96184	1,2,3-Trichloropropane	790 nc	61 (M) nc	31 nc
76131	1,1,2-Trichloro-1,2,2-trifluoroethane	58,000 nc	20,000 nc	1.9E+06 nc
1582098	Trifluralin	180 (S) (CC) sol	DATA	3.1E+05 nc
540841	2,2,4-Trimethyl pentane	2,400 (S) (GW) sol	3,000 nc	3.6E+05 nc
107404	2,4,4-Trimethyl-2-pentene	TX	TX	TX
526738	1,2,3-Trimethylbenzene	18,000 (JT) nc	6,400 (JT) nc	6,100 (JT) nc
95636	1,2,4-Trimethylbenzene	9,900 (JT) nc	3,500 (JT) nc	6,100 (JT) nc
108678	1,3,5-Trimethylbenzene	7,000 (JT) nc	2,400 (JT) nc	6,100 (JT) nc
126727	tris(2,3-Dibromopropyl)phosphate	1.7 (M) (CC) ca	DATA	7.5 ca
108054	Vinyl acetate	2.3E+05 nc	3,800 (M) nc	20,000 nc

Table 2. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure.

The following are **restricted** site-specific criteria that apply to a nonresidential structure **< 50,000 ft²** with a **basement**, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
75014	Vinyl chloride	120 ca	11 (M) ca	910 ca
1330207	Xylenes	27,000 (J) nc	6,600 (J) nc	22,000 (J) nc

Table 3. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
83329	Acenaphthene	3,900 (S) sol	1.1E+07 nc	21,000 nc
208968	Acenaphthylene	2,000 (CC) nc	DATA	21,000 nc
75070	Acetaldehyde	1.4E+05 nc	1,800 (M) nc	920 nc
64197	Acetic acid	1.0E+09 (S) sol	3.4E+07 nc	26,000 nc
67641	Acetone (#)	3.6E+08 (EE) st	4.6E+06 (EE) st	1.0E+06 (EE) st
75058	Acetonitrile	1.9E+06 nc	33,000 nc	6,100 nc
98862	Acetophenone	6.1E+06 (S) (DD) sol	1.1E+07 (C) (DD) dev (8.4E+05)	1.1E+05 (DD) dev
107028	Acrolein	210 nc	2.4 (M) nc	2.0 nc
79107	Acrylic acid	9.2E+05 nc	14,000 nc	20 nc
107131	Acrylonitrile	6,200 ca	100 ca	59 ca
309002	Aldrin	17 (S) sol	44,000 ca	0.81 ca
7664417	Ammonia (#)	1.4E+07 (EE) st	DATA	40,000 (EE) st
994058	t-Amyl methyl ether (TAME)	1.1E+05 nc	1,800 nc	6,300 nc
120127	Anthracene	43 (S) sol	6.6E+08 nc	1.0E+05 nc
103333	Azobenzene	66 (CC) ca	DATA	130 ca
71432	Benzene	1,700 ca	140 ca	510 ca
56553	Benzo(a)anthracene	9.4 (S) sol	3.3E+07 ca	66 ca
100447	Benzyl chloride	5,400 ca	1,000 ca	80 ca
111444	bis-2-Chloroethylether	12,000 ca	290 ca	12 ca
108861	Bromobenzene	99,000 nc	8,300 nc	6,100 nc
75274	Bromodichloromethane	2,600 nc	47 (M) nc	200 nc
75252	Bromoform	3.0E+05 ca	3,800 ca	3,600 ca
74839	Bromomethane	1,900 nc	47 (M) nc	1,000 nc
71363	n-Butanol	6.3E+07 (S) sol	1.1E+06 nc	36,000 nc
78933	2-Butanone (MEK)	8.8E+07 (DD) dev	1.1E+06 (DD) dev	3.3E+05 (DD) dev

Table 3. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
123864	n-Butyl acetate	3.9E+06 nc	57,000 nc	41,000 nc
75650	t-Butyl alcohol	1.3E+07 nc	1.7E+05 nc	7,400 nc
104518	n-Butylbenzene	12,000 (S) sol	29,000 nc	20,000 nc
135988	sec-Butylbenzene	18,000 (S) sol	2.0E+05 (C) nc (49,000)	41 nc
98066	t-Butylbenzene	100 nc	34 (M) nc	41 nc
79925	Camphene	1,400 nc	740 nc	8,200 nc
75150	Carbon disulfide	70,000 nc	2,700 nc	72,000 nc
56235	Carbon tetrachloride	650 ca	26 (M) ca	710 ca
57749	Chlordane	56 (S) (EE) sol	6.5E+05 (EE) st	19 (EE) st
108907	Chlorobenzene	41,000 nc	4,300 nc	5,100 nc
75683	1-Chloro-1,1-difluoroethane	1.3E+06 nc	1.3E+05 nc	5.1E+06 nc
75003	Chloroethane	4.9E+05 nc	17,000 nc	4.1E+05 nc
110758	2-Chloroethyl vinyl ether	TX	TX	TX
67663	Chloroform	910 ca	22 (M) ca	170 ca
74873	Chloromethane	11,000 nc	370 nc	9,200 nc
91587	beta-Chloronaphthalene	TX	TX	TX
95578	2-Chlorophenol	2.3E+06 (DD) dev	4.2E+05 (DD) dev	1,200 (DD) dev
95498	o-Chlorotoluene	69,000 nc	11,000 nc	8,200 nc
74908	Cyanide, Hydrogen	5,500 nc	95 (M) nc	82 nc
110827	Cyclohexane	55,000 (S) sol	17,000 nc	6.1E+05 nc
108941	Cyclohexanone	2.5E+07 (S) sol	3.6E+06 (C) nc (1.7E+06)	72,000 nc
72559	4-4'-DDE	40 (S) sol	3.3E+06 ca	41 ca
117840	Di-n-octyl phthalate	22 (S) (CC) sol	DATA	48,000 nc
123422	Diacetone alcohol	1.0E+09 (S) sol	2.8E+08 (C) nc (3.5E+07)	2.5E+05 nc
132649	Dibenzofuran	3,100 (S) sol	3.8E+08 nc	410 nc

Table 3. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
124481	Dibromochloromethane	6,600 ca	82 (M) ca	170 ca
96128	Dibromochloropropane	6.1E-02 (M) (CC) ca	DATA	0.71 ca
74953	Dibromomethane	13,000 nc	190 (M) nc	410 nc
95501	1,2-Dichlorobenzene	1.6E+05 (S) sol	78,000 nc	31,000 nc
541731	1,3-Dichlorobenzene	4,000 nc	540 nc	310 nc
106467	1,4-Dichlorobenzene	15,000 ca	2,000 ca	1,000 ca
75718	Dichlorodifluoromethane	2,100 nc	660 nc	34,000 nc
75343	1,1-Dichloroethane	8,000 ca	220 ca	2,500 ca
107062	1,2-Dichloroethane	2,500 ca	69 ca	150 ca
75354	1,1-Dichloroethylene	13,000 nc	650 nc	20,000 nc
156592	cis-1,2-Dichloroethylene	3,500 nc	110 nc	820 nc
156605	trans-1,2-Dichloroethylene	15,000 nc	630 nc	8,200 nc
78875	1,2-Dichloropropane	3,200 nc	110 nc	410 nc
542756	1,3-Dichloropropene	6,300 (J) ca	260 (J) ca	1000 (J) ca
60571	Dieldrin	200 (S) sol	65,000 ca	0.87 ca
60297	Diethyl ether	1.4E+06 nc	19,000 nc	1.0E+05 nc
108203	Diisopropyl ether	4.1E+05 (DD) dev	7,000 (DD) dev	47,000 (DD) dev
108189	Diisopropylamine	4.3E+06 nc	1.5E+05 nc	20,000 nc
127195	N,N-Dimethylacetamide	1.0E+09 (S) sol	2.0E+08 (C) nc (3.9E+07)	10,000 nc
121697	N,N-Dimethylaniline	2.1E+05 ca	9,900 ca	330 ca
68122	Dimethylformamide	1.5E+08 nc	2.4E+06 nc	720 nc
123911	1,4-Dioxane	2.3E+06 ca	31,000 ca	800 ca
115297	Endosulfan	TX	TX	TX
106898	Epichlorohydrin	57,000 nc	990 nc	100 nc
64175	Ethanol (#)	1.0E+09 (S) (EE) sol	2.4E+07 (EE) st	6.3E+05 (EE) st

Table 3. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
141786	Ethyl acetate	9.5E+05 nc	11,000 nc	7,200 nc
637923	Ethyl-tert-butyl ether (ETBE)	1,700 (CC) nc	DATA	38,000 nc
100414	Ethylbenzene	5,400 ca	1,000 ca	1,600 ca
106934	Ethylene dibromide	370 ca	6.2 (M) ca	6.6 ca
86737	Fluorene	1,700 (S) sol	2.5E+07 nc	14,000 nc
50000	Formaldehyde	5.4E+06 ca	1.1E+05 ca	310 ca
64186	Formic acid	1.3E+06 nc	24,000 nc	31 nc
76448	Heptachlor	180 (S) sol	3.1E+05 ca	3.1 ca
1024573	Heptachlor epoxide	0.57 (CC) ca	DATA	1.5 ca
142825	n-Heptane	3,400 (S) sol	6,800 nc	3.6E+05 nc
87821	Hexabromobenzene	TX	TX	TX
118741	Hexachlorobenzene (C-66)	6.2 (S) sol	360 nc	3.6 nc
87683	Hexachlorobutadiene (C-46)	1,300 ca	210 ca	180 ca
77474	Hexachlorocyclopentadiene (C-56)	65 nc	17 (M) nc	20 nc
67721	Hexachloroethane	5,900 ca	270 (M) ca	400 ca
110543	n-Hexane	3,000 (GW) nc	1,300 nc	72,000 nc
591786	2-Hexanone	7.4E+05 nc	11,000 nc	3,100 nc
78831	Isobutyl alcohol	8.5E+07 (S) sol	4.2E+06 (C) nc (3.3E+06)	1.5E+05 nc
67630	Isopropyl alcohol	3.7E+07 nc	5.2E+05 nc	20,000 nc
98828	Isopropyl benzene	1,200 ca	320 ca	380 ca
58899	Lindane	TX	TX	TX
Varies	Mercury (Total)	60 (S) sol	1,200 nc	31 nc
74828	Methane	10,000 (AA)	DATA	8.4E+06 (GG)
67561	Methanol	1.0E+09 (S) (DD) sol	5.0E+07 (C) (DD) dev (3.5E+07)	1.3E+06 (DD) dev
109864	2-Methoxyethanol	5.7E+06 nc	79,000 nc	110 nc

Table 3. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
109024	N-Methyl-morpholine	TX	TX	TX
108101	4-Methyl-2-pentanone (MIBK)	1.9E+07 (S) (DD) sol	4.4E+05 (DD) dev	2.0E+05 (DD) dev
1634044	Methyl-tert-butyl ether (MTBE)	4.9E+05 ca	6,300 ca	15,000 ca
96377	Methylcyclopentane	3,800 nc	1,500 (M) nc	72,000 nc
75092	Methylene chloride	2.8E+05 nc	6,900 nc	61,000 nc
91576	2-Methylnaphthalene	25,000 (S) sol	90,000 nc	1,000 nc
2385855	Mirex	TX	TX	TX
91203	Naphthalene	9,300 ca	5,700 ca	120 ca
98953	Nitrobenzene	1.0E+05 ca	14,000 ca	100 ca
88755	2-Nitrophenol	2.0 (M) (CC) nc	DATA	5.1 nc
608935	Pentachlorobenzene	0.54 (M) (CC) nc	DATA	10 nc
82688	Pentachloronitrobenzene	250 (CC) nc	DATA	1,100 nc
109660	Pentane	4,100 (GW) nc	1,900 (M) nc	1.0E+05 nc
109682	2-Pentene	TX	TX	TX
335671	Perfluorooctanoic acid	TX	TX	TX
85018	Phenanthrene	1,200 (S) sol	88,000 nc	10 nc
110894	Piperidine	1.0E+09 (S) sol	1.1E+08 nc	7.2E+05 nc
1336363	Polychlorinated biphenyls (PCBs)	2.9 (CC) (J) ca	DATA	40 (J) ca
79094	Propionic acid	8.3E+08 nc	1.2E+07 nc	31,000 nc
71238	Propyl alcohol	1.0E+08 (DD) dev	1.5E+06 (DD) dev	49,000 (DD) dev
103651	n-Propylbenzene (#)	52,000 (S) (DD) sol	32,000 (DD) dev	33,000 (DD) dev
129000	Pyrene	140 (S) sol	1.3E+09 nc	10,000 nc
110861	Pyridine	4.6E+05 nc	29,000 nc	360 nc
100425	Styrene	67,000 ca	13,000 ca	7,000 ca
95943	1,2,4,5-Tetrachlorobenzene	600 (S) sol	3,700 nc	100 nc

Table 3. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
630206	1,1,1,2-Tetrachloroethane	8,500 ca	270 ca	540 ca
79345	1,1,2,2-Tetrachloroethane	6,200 ca	230 ca	69 ca
127184	Tetrachloroethylene	5,000 (EE) st	220 (EE) st	2,700 (EE) st
109999	Tetrahydrofuran	4.1E+07 nc	6.7E+05 nc	2.0E+05 nc
632224	1,1,3,3-Tetramethylurea	43,000 (CC) nc	DATA	82 nc
509148	Tetranitromethane	54 (M) ca	6.5 (M) ca	0.27 ca
108883	Toluene	5.3E+05 (S) (EE) sol	96,000 (EE) st	2.5E+05 (EE) st
2303175	Triallate	4,000 (S) (DD) (CC) sol	DATA	6,700 (DD) dev
102829	Tributylamine	1.4E+05 (S) sol	1.8E+05 nc	720 nc
87616	1,2,3-Trichlorobenzene	18,000 (S) sol	44,000 nc	2,800 nc
120821	1,2,4-Trichlorobenzene	7,700 nc	2,800 nc	200 nc
71556	1,1,1-Trichloroethane (#)	3.1E+05 (EE) st	11,000 (EE) st	2.3E+05 (EE) st
79005	1,1,2-Trichloroethane	620 nc	20 (M) nc	20 nc
79016	Trichloroethylene	310 (DD) dev	12 (M) (DD) dev	130 (DD) dev
75694	Trichlorofluoromethane	9,000 nc	1,000 nc	45,000 nc
96184	1,2,3-Trichloropropane	2,700 nc	140 nc	31 nc
76131	1,1,2-Trichloro-1,2,2-trifluoroethane	1.7E+05 (S) sol	45,000 nc	1.9E+06 nc
1582098	Trifluralin	180 (S) (CC) sol	DATA	3.1E+05 nc
540841	2,2,4-Trimethyl pentane	2,400 (S) sol	6,700 nc	3.6E+05 nc
107404	2,4,4-Trimethyl-2-pentene	TX	TX	TX
526738	1,2,3-Trimethylbenzene	61,000 (JT) nc	14,000 (JT) nc	6,100 (JT) nc
95636	1,2,4-Trimethylbenzene	34,000 (JT) nc	7,800 (JT) nc	6,100 (JT) nc
108678	1,3,5-Trimethylbenzene	24,000 (JT) nc	5,400 (JT) nc	6,100 (JT) nc
126727	tris(2,3-Dibromopropyl)phosphate	3.6 (M) (CC) ca	DATA	7.5 ca
108054	Vinyl acetate	7.7E+05 nc	8,600 nc	20,000 nc

Table 3. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a slab-on-grade, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
75014	Vinyl chloride	390 ca	24 (M) ca	910 ca
1330207	Xylenes	91,000 (J) nc	15,000 (J) nc	22,000 (J) nc

Table 4. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
83329	Acenaphthene	3,900 (S) sol	7.2E+06 nc	21,000 nc
208968	Acenaphthylene	1,400 (CC) nc	DATA	21,000 nc
75070	Acetaldehyde	68,000 nc	1,200 (M) nc	920 nc
64197	Acetic acid	1.0E+09 (S) sol	2.3E+07 nc	26,000 nc
67641	Acetone (#)	1.6E+08 (EE) st	3.1E+06 (EE) st	1.0E+06 (EE) st
75058	Acetonitrile	9.2E+05 nc	22,000 nc	6,100 nc
98862	Acetophenone	6.1E+06 (S) (DD) sol	7.4E+06 (C) (DD) dev (8.4E+05)	1.1E+05 (DD) dev
107028	Acrolein	100 nc	1.6 (M) nc	2.0 nc
79107	Acrylic acid	4.2E+05 nc	9,100 nc	20 nc
107131	Acrylonitrile	2,900 ca	67 (M) ca	59 ca
309002	Aldrin	17 (S) sol	29,000 ca	0.81 ca
7664417	Ammonia (#)	7.4E+06 (EE) st	DATA	40,000 (EE) st
994058	t-Amyl methyl ether (TAME)	49,000 nc	1,200 nc	6,300 nc
120127	Anthracene	43 (S) sol	4.4E+08 nc	1.0E+05 nc
103333	Azobenzene	46 (CC) ca	DATA	130 ca
71432	Benzene	760 ca	94 ca	510 ca
56553	Benzo(a)anthracene	9.4 (S) sol	2.2E+07 ca	66 ca
100447	Benzyl chloride	2,400 ca	670 ca	80 ca
111444	bis-2-Chloroethylether	4,900 ca	190 ca	12 ca
108861	Bromobenzene	43,000 nc	5,600 nc	6,100 nc
75274	Bromodichloromethane	1,100 nc	31 (M) nc	200 nc
75252	Bromoform	1.2E+05 ca	2,500 ca	3,600 ca
74839	Bromomethane	860 nc	32 (M) nc	1,000 nc
71363	n-Butanol	3.3E+07 nc	7.0E+05 nc	36,000 nc
78933	2-Butanone (MEK)	4.0E+07 (DD) dev	7.4E+05 (DD) dev	3.3E+05 (DD) dev

Table 4. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
123864	n-Butyl acetate	1.7E+06 nc	38,000 nc	41,000 nc
75650	t-Butyl alcohol	5.8E+06 nc	1.1E+05 nc	7,400 nc
104518	n-Butylbenzene	12,000 (S) sol	20,000 nc	20,000 nc
135988	sec-Butylbenzene	18,000 (S) sol	1.3E+05 (C) nc (49,000)	41 nc
98066	t-Butylbenzene	44 nc	23 (M) nc	41 nc
79925	Camphene	620 nc	490 nc	8,200 nc
75150	Carbon disulfide	33,000 nc	1,800 nc	72,000 nc
56235	Carbon tetrachloride	290 ca	17 (M) ca	710 ca
57749	Chlordane	56 (S) (EE) sol	4.3E+05 (EE) st	19 (EE) st
108907	Chlorobenzene	18,000 nc	2,900 nc	5,100 nc
75683	1-Chloro-1,1-difluoroethane	5.9E+05 nc	84,000 nc	5.1E+06 nc
75003	Chloroethane	2.3E+05 nc	12,000 nc	4.1E+05 nc
110758	2-Chloroethyl vinyl ether	TX	TX	TX
67663	Chloroform	410 ca	15 (M) ca	170 ca
74873	Chloromethane	5,300 nc	240 (M) nc	9,200 nc
91587	beta-Chloronaphthalene	TX	TX	TX
95578	2-Chlorophenol	9.5E+05 (DD) dev	2.8E+05 (DD) dev	1,200 (DD) dev
95498	o-Chlorotoluene	31,000 nc	7,000 nc	8,200 nc
74908	Cyanide, Hydrogen	2,800 nc	63 (M) nc	82 nc
110827	Cyclohexane	36,000 nc	11,000 nc	6.1E+05 nc
108941	Cyclohexanone	2.5E+07 (S) sol	2.4E+06 (C) nc (1.7E+06)	72,000 nc
72559	4-4'-DDE	40 (S) sol	2.2E+06 ca	41 ca
117840	Di-n-octyl phthalate	22 (S) (CC) sol	DATA	48,000 nc
123422	Diacetone alcohol	1.0E+09 (S) sol	1.8E+08 (C) nc (3.5E+07)	2.5E+05 nc
132649	Dibenzofuran	3,100 (S) sol	2.5E+08 nc	410 nc

Table 4. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
124481	Dibromochloromethane	2,800 ca	54 (M) ca	170 ca
96128	Dibromochloropropane	4.2E-02 (M) (CC) ca	DATA	0.71 ca
74953	Dibromomethane	5,900 nc	120 (M) nc	410 nc
95501	1,2-Dichlorobenzene	1.6E+05 (S) sol	52,000 nc	31,000 nc
541731	1,3-Dichlorobenzene	1,700 nc	360 nc	310 nc
106467	1,4-Dichlorobenzene	6,400 ca	1,300 ca	1,000 ca
75718	Dichlorodifluoromethane	960 nc	440 nc	34,000 nc
75343	1,1-Dichloroethane	3,600 ca	150 ca	2,500 ca
107062	1,2-Dichloroethane	1,100 ca	46 (M) ca	150 ca
75354	1,1-Dichloroethylene	5,700 nc	430 nc	20,000 nc
156592	cis-1,2-Dichloroethylene	1,600 nc	74 nc	820 nc
156605	trans-1,2-Dichloroethylene	6,700 nc	420 nc	8,200 nc
78875	1,2-Dichloropropane	1,400 nc	74 nc	410 nc
542756	1,3-Dichloropropene	2,800 (J) ca	170 (J) ca	1000 (J) ca
60571	Dieldrin	200 (S) sol	43,000 ca	0.87 ca
60297	Diethyl ether	6.2E+05 nc	12,000 nc	1.0E+05 nc
108203	Diisopropyl ether	1.8E+05 (DD) dev	4,700 (DD) dev	47,000 (DD) dev
108189	Diisopropylamine	1.9E+06 nc	1.0E+05 nc	20,000 nc
127195	N,N-Dimethylacetamide	1.0E+09 (S) sol	1.4E+08 (C) nc (3.9E+07)	10,000 nc
121697	N,N-Dimethylaniline	88,000 ca	6,600 ca	330 ca
68122	Dimethylformamide	7.2E+07 nc	1.6E+06 nc	720 nc
123911	1,4-Dioxane	1.0E+06 ca	21,000 ca	800 ca
115297	Endosulfan	TX	TX	TX
106898	Epichlorohydrin	26,000 nc	660 nc	100 nc
64175	Ethanol (#)	7.4E+08 (EE) st	1.6E+07 (EE) st	6.3E+05 (EE) st

Table 4. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
141786	Ethyl acetate	4.3E+05 nc	7,300 nc	7,200 nc
637923	Ethyl-tert-butyl ether (ETBE)	1,200 (CC) nc	DATA	38,000 nc
100414	Ethylbenzene	2,400 ca	680 ca	1,600 ca
106934	Ethylene dibromide	160 ca	4.2 (M) ca	6.6 ca
86737	Fluorene	1,700 (S) sol	1.7E+07 nc	14,000 nc
50000	Formaldehyde	2.8E+06 ca	73,000 ca	310 ca
64186	Formic acid	6.5E+05 nc	16,000 (M) nc	31 nc
76448	Heptachlor	180 (S) sol	2.0E+05 ca	3.1 ca
1024573	Heptachlor epoxide	0.40 (CC) ca	DATA	1.5 ca
142825	n-Heptane	3,400 (S) (GW) sol	4,500 nc	3.6E+05 nc
87821	Hexabromobenzene	TX	TX	TX
118741	Hexachlorobenzene (C-66)	6.2 (S) sol	240 (M) nc	3.6 nc
87683	Hexachlorobutadiene (C-46)	550 ca	140 ca	180 ca
77474	Hexachlorocyclopentadiene (C-56)	27 nc	11 (M) nc	20 nc
67721	Hexachloroethane	2,500 ca	180 (M) ca	400 ca
110543	n-Hexane	2,000 (GW) nc	880 nc	72,000 nc
591786	2-Hexanone	3.2E+05 nc	7,600 nc	3,100 nc
78831	Isobutyl alcohol	8.5E+07 (S) sol	2.8E+06 nc	1.5E+05 nc
67630	Isopropyl alcohol	1.7E+07 nc	3.5E+05 nc	20,000 nc
98828	Isopropyl benzene	540 ca	210 (M) ca	380 ca
58899	Lindane	TX	TX	TX
Varies	Mercury (Total)	49 nc	780 nc	31 nc
74828	Methane	10,000 (AA)	DATA	8.4E+06 (GG)
67561	Methanol	1.0E+09 (S) (DD) sol	3.3E+07 (DD) dev	1.3E+06 (DD) dev
109864	2-Methoxyethanol	2.6E+06 nc	53,000 nc	110 nc

Table 4. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
109024	N-Methyl-morpholine	TX	TX	TX
108101	4-Methyl-2-pentanone (MIBK)	1.4E+07 (DD) dev	2.9E+05 (DD) dev	2.0E+05 (DD) dev
1634044	Methyl-tert-butyl ether (MTBE)	2.2E+05 ca	4,200 ca	15,000 ca
96377	Methylcyclopentane	1,700 nc	1,000 (M) nc	72,000 nc
75092	Methylene chloride	1.3E+05 nc	4,600 nc	61,000 nc
91576	2-Methylnaphthalene	25,000 (S) sol	60,000 nc	1,000 nc
2385855	Mirex	TX	TX	TX
91203	Naphthalene	4,100 ca	3,800 ca	120 ca
98953	Nitrobenzene	44,000 ca	9,600 ca	100 ca
88755	2-Nitrophenol	1.4 (M) (CC) nc	DATA	5.1 nc
608935	Pentachlorobenzene	0.36 (M) (CC) nc	DATA	10 nc
82688	Pentachloronitrobenzene	170 (CC) nc	DATA	1,100 nc
109660	Pentane	2,700 (GW) nc	1,300 (M) nc	1.0E+05 nc
109682	2-Pentene	TX	TX	TX
335671	Perfluorooctanoic acid	TX	TX	TX
85018	Phenanthrene	1,200 (S) sol	58,000 nc	10 nc
110894	Piperidine	9.9E+08 nc	7.4E+07 nc	7.2E+05 nc
1336363	Polychlorinated biphenyls (PCBs)	1.9 (CC) (J) ca	DATA	40 (J) ca
79094	Propionic acid	3.7E+08 nc	7.9E+06 nc	31,000 nc
71238	Propyl alcohol	4.6E+07 (DD) dev	9.7E+05 (DD) dev	49,000 (DD) dev
103651	n-Propylbenzene (#)	46,000 (DD) dev	21,000 (DD) dev	33,000 (DD) dev
129000	Pyrene	140 (S) sol	8.8E+08 nc	10,000 nc
110861	Pyridine	2.0E+05 nc	19,000 nc	360 nc
100425	Styrene	30,000 ca	8,600 ca	7,000 ca
95943	1,2,4,5-Tetrachlorobenzene	600 (S) sol	2,500 nc	100 nc

Table 4. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure. The following are restricted site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
630206	1,1,1,2-Tetrachloroethane	3,700 ca	180 ca	540 ca
79345	1,1,2,2-Tetrachloroethane	2,600 ca	150 ca	69 ca
127184	Tetrachloroethylene	2,200 (EE) st	150 (EE) st	2,700 (EE) st
109999	Tetrahydrofuran	1.9E+07 nc	4.5E+05 nc	2.0E+05 nc
632224	1,1,3,3-Tetramethylurea	31,000 (CC) nc	DATA	82 nc
509148	Tetranitromethane	22 (M) ca	4.3 (M) ca	0.27 ca
108883	Toluene	3.8E+05 (EE) st	64,000 (EE) st	2.5E+05 (EE) st
2303175	Triallate	3,500 (DD) (CC) dev	DATA	6,700 (DD) dev
102829	Tributylamine	1.4E+05 (S) sol	1.2E+05 nc	720 nc
87616	1,2,3-Trichlorobenzene	18,000 (S) sol	29,000 nc	2,800 nc
120821	1,2,4-Trichlorobenzene	3,300 nc	1,900 nc	200 nc
71556	1,1,1-Trichloroethane (#)	1.4E+05 (EE) st	7,500 (EE) st	2.3E+05 (EE) st
79005	1,1,2-Trichloroethane	280 nc	13 (M) nc	20 nc
79016	Trichloroethylene	140 (DD) dev	8.0 (M) (DD) dev	130 (DD) dev
75694	Trichlorofluoromethane	4,000 nc	670 nc	45,000 nc
96184	1,2,3-Trichloropropane	1,200 nc	91 (M) nc	31 nc
76131	1,1,2-Trichloro-1,2,2-trifluoroethane	88,000 nc	30,000 nc	1.9E+06 nc
1582098	Trifluralin	180 (S) (CC) sol	DATA	3.1E+05 nc
540841	2,2,4-Trimethyl pentane	2,400 (S) (GW) sol	4,400 nc	3.6E+05 nc
107404	2,4,4-Trimethyl-2-pentene	TX	TX	TX
526738	1,2,3-Trimethylbenzene	27,000 (JT) nc	9,600 (JT) nc	6,100 (JT) nc
95636	1,2,4-Trimethylbenzene	15,000 (JT) nc	5,200 (JT) nc	6,100 (JT) nc
108678	1,3,5-Trimethylbenzene	10,000 (JT) nc	3,600 (JT) nc	6,100 (JT) nc
126727	tris(2,3-Dibromopropyl)phosphate	2.5 (M) (CC) ca	DATA	7.5 ca
108054	Vinyl acetate	3.5E+05 nc	5,700 nc	20,000 nc

Table 4. Nonresidential Volatilization to Indoor Air Criteria (VIAC) adjusted to a 12-hour workday exposure.

The following are **restricted** site-specific criteria that apply to a nonresidential structure > 50,000 ft² with a **basement**, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	12-hour Groundwater Not In Contact (GWNIC) (µg/L)	12-hour Soil (µg/kg)	12-hour Soil Gas** (µg/m ³)
75014	Vinyl chloride	180 ca	16 (M) ca	910 ca
1330207	Xylenes	41,000 (J) nc	9,900 (J) nc	22,000 (J) nc

Table 5. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a residential house with a **slab-on-grade** the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
83329	Acenaphthene	3,900 (S) sol	2.1E+05 nc	7,300 nc
208968	Acenaphthylene	65 (CC) nc	DATA	7,300 nc
75070	Acetaldehyde	4,300 nc	34 (M) nc	310 nc
64197	Acetic acid	6.0E+07 nc	6.5E+05 nc	8,700 nc
67641	Acetone	3.2E+07 (EE) st	2.6E+05 (EE) st	1.0E+06 (EE) st
75058	Acetonitrile	57,000 nc	620 (M) nc	2,100 nc
98862	Acetophenone	6.1E+06 (S) (DD) sol	6.2E+05 (DD) dev	1.1E+05 (DD) dev
107028	Acrolein	6.7 (M) nc	4.6E-02 (M) nc	0.70 nc
79107	Acrylic acid	27,000 nc	260 nc	7.0 nc
107131	Acrylonitrile	120 ca	1.2 (M) ca	12 ca
309002	Aldrin	17 (S) sol	530 ca	0.17 ca
7664417	Ammonia	4.5E+05 nc	DATA	17,000 nc
994058	t-Amyl methyl ether (TAME)	3,600 nc	34 (M) nc	2,200 nc
120127	Anthracene	43 (S) sol	1.3E+07 nc	35,000 nc
103333	Azobenzene	1.8 (M) (CC) ca	DATA	27 ca
71432	Benzene	34 ca	1.7 (M) ca	110 ca
56553	Benzo(a)anthracene	9.4 (S) (MM) sol	1.6E+05 (MM) mut	5.8 (MM) mut
100447	Benzyl chloride	110 ca	12 (M) ca	17 ca
111444	bis-2-Chloroethylether	240 ca	3.4 (M) ca	2.6 ca
108861	Bromobenzene	3,300 nc	160 nc	2,100 nc
75274	Bromodichloromethane	60 ca	0.61 (M) ca	48 ca
75252	Bromoform	6,400 ca	45 (M) ca	770 ca
74839	Bromomethane	59 nc	0.90 (M) nc	350 nc
71363	n-Butanol	2.2E+06 nc	20,000 nc	12,000 nc
78933	2-Butanone (MEK)	4.0E+06 (DD) dev	31,000 (DD) dev	1.7E+05 (DD) dev
123864	n-Butyl acetate	1.3E+05 nc	1,100 nc	14,000 nc

Table 5. Residential Volatilization to Indoor Air Criteria (VIAC). The following are restricted site-specific criteria that apply to a residential house with a slab-on-grade the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
75650	t-Butyl alcohol	4.0E+05 nc	3,200 nc	2,500 nc
104518	n-Butylbenzene	2,000 nc	560 nc	7,000 nc
135988	sec-Butylbenzene	9,200 nc	3,800 nc	14 nc
98066	t-Butylbenzene	3.4 nc	0.64 (M) nc	14 nc
79925	Camphene	46 nc	14 nc	2,800 nc
75150	Carbon disulfide	2,200 nc	52 (M) nc	24,000 nc
56235	Carbon tetrachloride	14 ca	0.31 (M) ca	150 ca
57749	Chlordane	56 (S) (EE) sol	13,000 (EE) st	6.7 (EE) st
108907	Chlorobenzene	1,300 nc	82 nc	1,700 nc
75683	1-Chloro-1,1-difluoroethane	43,000 nc	2,400 nc	1.7E+06 nc
75003	Chloroethane	15,000 nc	330 nc	1.4E+05 nc
110758	2-Chloroethyl vinyl ether	TX	TX	TX
67663	Chloroform	19 ca	0.26 (M) ca	37 ca
74873	Chloromethane	340 nc	6.9 (M) nc	3,100 nc
91587	beta-Chloronaphthalene	TX	TX	TX
95578	2-Chlorophenol	1.0E+05 (DD) dev	12,000 (DD) dev	600 (DD) dev
95498	o-Chlorotoluene	2,300 nc	200 nc	2,800 nc
74908	Cyanide, Hydrogen	160 nc	1.8 (M) nc	28 nc
110827	Cyclohexane	2,600 nc	320 (M) nc	2.1E+05 nc
108941	Cyclohexanone	5.1E+06 nc	69,000 nc	24,000 nc
72559	4-4'-DDE	40 (S) sol	39,000 ca	8.7 ca
117840	Di-n-octyl phthalate	22 (S) (CC) sol	DATA	16,000 nc
123422	Diacetone alcohol	7.5E+08 nc	5.2E+06 nc	83,000 nc
132649	Dibenzofuran	3,100 (S) sol	7.1E+06 nc	140 nc
124481	Dibromochloromethane	58 (MM) mut	0.40 (MM) (M) mut	14 (MM) mut
96128	Dibromochloropropane	4.5E-04 (MM) (M) (CC) mut	DATA	6.2E-02 (MM) mut

Table 5. Residential Volatilization to Indoor Air Criteria (VIAC). The following are restricted site-specific criteria that apply to a residential house with a slab-on-grade the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
74953	Dibromomethane	450 nc	3.5 (M) nc	140 nc
95501	1,2-Dichlorobenzene	19,000 nc	1,500 nc	10,000 nc
541731	1,3-Dichlorobenzene	130 nc	10 (M) nc	100 nc
106467	1,4-Dichlorobenzene	310 ca	23 (M) ca	220 ca
75718	Dichlorodifluoromethane	71 nc	12 (M) nc	11,000 nc
75343	1,1-Dichloroethane	160 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	50 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	410 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	110 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	480 nc	12 (M) nc	2,800 nc
78875	1,2-Dichloropropane	100 nc	2.1 (M) nc	140 nc
542756	1,3-Dichloropropene	130 (J) ca	3.1 (M) (J) ca	210 (J) ca
60571	Dieldrin	200 (S) sol	780 ca	0.18 ca
60297	Diethyl ether	44,000 nc	350 nc	35,000 nc
108203	Diisopropyl ether	20,000 (DD) dev	200 (M) (DD) dev	23,000 (DD) dev
108189	Diisopropylamine	1.4E+05 nc	2,900 nc	7,000 nc
127195	N,N-Dimethylacetamide	2.2E+08 nc	3.8E+06 nc	3,500 nc
121697	N,N-Dimethylaniline	4,100 ca	120 ca	71 ca
68122	Dimethylformamide	4.3E+06 nc	46,000 nc	240 nc
123911	1,4-Dioxane	43,000 ca	370 (M) ca	170 ca
115297	Endosulfan	TX	TX	TX
106898	Epichlorohydrin	1,800 nc	19 (M) nc	35 nc
64175	Ethanol	1.3E+08 (EE) st	1.3E+06 (EE) st	6.3E+05 (EE) st
141786	Ethyl acetate	31,000 nc	210 nc	2,400 nc
637923	Ethyl-tert-butyl ether (ETBE)	22 (CC) nc	DATA	13,000 nc
100414	Ethylbenzene	110 ca	12 (M) ca	340 ca

Table 5. Residential Volatilization to Indoor Air Criteria (VIAC). The following are restricted site-specific criteria that apply to a residential house with a slab-on-grade the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
106934	Ethylene dibromide	8.0 ca	7.4E-02 (M) ca	1.4 ca
86737	Fluorene	1,700 (S) sol	4.7E+05 nc	4,900 nc
50000	Formaldehyde	36,000 (MM) mut	530 (MM) (M) mut	27 (MM) mut
64186	Formic acid	36,000 nc	450 (M) nc	10 nc
76448	Heptachlor	24 ca	3,700 ca	0.65 ca
1024573	Heptachlor epoxide	1.4E-02 (CC) ca	DATA	0.33 ca
142825	n-Heptane	150 (GW) nc	130 nc	1.2E+05 nc
87821	Hexabromobenzene	TX	TX	TX
118741	Hexachlorobenzene (C-66)	6.2 (S) sol	6.8 (M) nc	1.2 nc
87683	Hexachlorobutadiene (C-46)	29 ca	2.5 (M) ca	39 ca
77474	Hexachlorocyclopentadiene (C-56)	2.3 (M) nc	0.32 (M) nc	7.0 nc
67721	Hexachloroethane	130 ca	3.3 (M) ca	85 ca
110543	n-Hexane	29 (GW) nc	25 nc	24,000 nc
591786	2-Hexanone	24,000 nc	220 (M) nc	1,000 nc
78831	Isobutyl alcohol	9.2E+06 nc	79,000 nc	52,000 nc
67630	Isopropyl alcohol	1.1E+06 nc	9,900 nc	7,000 nc
98828	Isopropyl benzene	26 ca	3.8 (M) ca	81 ca
58899	Lindane	TX	TX	TX
Varies	Mercury (Total)	3.6 nc	22 nc	10 nc
74828	Methane	10,000 (AA)	DATA	8.4E+06 (GG)
67561	Methanol	1.2E+08 (DD) dev	1.4E+06 (DD) dev	6.7E+05 (DD) dev
109864	2-Methoxyethanol	1.7E+05 nc	1,500 nc	38 nc
109024	N-Methyl-morpholine	TX	TX	TX
108101	4-Methyl-2-pentanone (MIBK)	1.6E+06 (DD) dev	12,000 (DD) dev	1.0E+05 (DD) dev
1634044	Methyl-tert-butyl ether (MTBE)	10,000 ca	74 (M) ca	3,300 ca
96377	Methylcyclopentane	120 nc	29 (M) nc	24,000 nc

Table 5. Residential Volatilization to Indoor Air Criteria (VIAC). The following are restricted site-specific criteria that apply to a residential house with a slab-on-grade the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
75092	Methylene chloride	9,100 nc	130 nc	21,000 nc
91576	2-Methylnaphthalene	3,500 nc	1,700 nc	350 nc
2385855	Mirex	TX	TX	TX
91203	Naphthalene	190 ca	67 (M) ca	25 ca
98953	Nitrobenzene	2,000 ca	170 (M) ca	21 ca
88755	2-Nitrophenol	0.12 (M) (CC) nc	DATA	1.7 nc
608935	Pentachlorobenzene	8.6E-03 (M) (CC) nc	DATA	3.5 nc
82688	Pentachloronitrobenzene	8.5 (M) (CC) nc	DATA	380 nc
109660	Pentane	45 (M) nc	36 (M) nc	35,000 nc
109682	2-Pentene	TX	TX	TX
335671	Perfluorooctanoic acid	TX	TX	TX
85018	Phenanthrene	470 nc	1,700 nc	3.5 nc
110894	Piperidine	6.9E+07 nc	2.1E+06 nc	2.4E+05 nc
1336363	Polychlorinated biphenyls (PCBs)	3.1E-02 (M) (CC) (J) ca	DATA	8.5 (J) ca
79094	Propionic acid	2.4E+07 nc	2.2E+05 nc	10,000 nc
71238	Propyl alcohol	4.4E+06 (DD) dev	41,000 (DD) dev	24,000 (DD) dev
103651	n-Propylbenzene	10,000 (DD) dev	1,800 (DD) dev	33,000 (DD) dev
129000	Pyrene	140 (S) sol	2.5E+07 nc	3,500 nc
110861	Pyridine	14,000 nc	550 nc	120 nc
100425	Styrene	1,400 ca	150 ca	1,500 ca
95943	1,2,4,5-Tetrachlorobenzene	250 nc	71 (M) nc	35 nc
630206	1,1,1,2-Tetrachloroethane	180 ca	3.2 (M) ca	110 ca
79345	1,1,2,2-Tetrachloroethane	130 ca	2.7 (M) ca	15 ca
127184	Tetrachloroethylene	250 (EE) st	6.2 (M) (EE) st	1,400 (EE) st
109999	Tetrahydrofuran	1.3E+06 nc	13,000 nc	70,000 nc
632224	1,1,3,3-Tetramethylurea	2,700 (CC) nc	DATA	28 nc

Table 5. Residential Volatilization to Indoor Air Criteria (VIAC). The following are restricted site-specific criteria that apply to a residential house with a slab-on-grade the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
509148	Tetranitromethane	1.2 (M) ca	7.7E-02 (M) ca	5.6E-02 ca
108883	Toluene	56,000 nc	3,700 nc	1.7E+05 nc
2303175	Triallate	530 (DD) (CC) dev	DATA	6,700 (DD) dev
102829	Tributylamine	13,000 nc	3,400 nc	240 nc
87616	1,2,3-Trichlorobenzene	4,100 nc	840 nc	940 nc
120821	1,2,4-Trichlorobenzene	270 nc	53 (M) nc	70 nc
71556	1,1,1-Trichloroethane	22,000 (EE) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	21 nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	15 (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
75694	Trichlorofluoromethane	300 nc	19 (M) nc	15,000 nc
96184	1,2,3-Trichloropropane	91 nc	2.6 (M) nc	10 nc
76131	1,1,2-Trichloro-1,2,2-trifluoroethane	7,100 nc	860 nc	6.6E+05 nc
1582098	Trifluralin	180 (S) (CC) sol	DATA	1.0E+05 nc
540841	2,2,4-Trimethyl pentane	160 (GW) nc	130 (M) nc	1.2E+05 nc
107404	2,4,4-Trimethyl-2-pentene	TX	TX	TX
526738	1,2,3-Trimethylbenzene	2,000 (JT) nc	270 (JT) nc	2,100 (JT) nc
95636	1,2,4-Trimethylbenzene	1,100 (JT) nc	150 (JT) nc	2,100 (JT) nc
108678	1,3,5-Trimethylbenzene	800 (JT) nc	100 (JT) nc	2,100 (JT) nc
126727	tris(2,3-Dibromopropyl)phosphate	7.4E-02 (M) (CC) ca	DATA	1.6 ca
108054	Vinyl acetate	25,000 nc	160 (M) nc	7,000 nc
75014	Vinyl chloride	2.2 (MM) mut	8.2E-02 (MM) (M) mut	54 (MM) mut
1330207	Xylenes	3,000 (J) nc	280 (J) nc	7,600 (J) nc

Table 6. Residential Volatilization to Indoor Air Criteria (VIAC). The following are unrestricted site-specific criteria that apply to a residential house with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
83329	Acenaphthene	3,900 (S) sol	2.0E+05 nc	7,300 nc
208968	Acenaphthylene	65 (CC) nc	DATA	7,300 nc
75070	Acetaldehyde	2,400 nc	34 (M) nc	310 nc
64197	Acetic acid	3.4E+07 nc	6.5E+05 nc	8,700 nc
67641	Acetone	1.8E+07 (EE) st	2.6E+05 (EE) st	1.0E+06 (EE) st
75058	Acetonitrile	33,000 nc	620 (M) nc	2,100 nc
98862	Acetophenone	6.1E+06 (S) (DD) sol	6.2E+05 (DD) dev	1.1E+05 (DD) dev
107028	Acrolein	3.7 (M) nc	4.6E-02 (M) nc	0.70 nc
79107	Acrylic acid	15,000 nc	260 nc	7.0 nc
107131	Acrylonitrile	67 ca	1.2 (M) ca	12 ca
309002	Aldrin	17 (S) sol	520 ca	0.17 ca
7664417	Ammonia	3.0E+05 nc	DATA	17,000 nc
994058	t-Amyl methyl ether (TAME)	1,900 nc	34 (M) nc	2,200 nc
120127	Anthracene	43 (S) sol	1.3E+07 nc	35,000 nc
103333	Azobenzene	1.8 (M) (CC) ca	DATA	27 ca
71432	Benzene	18 ca	1.7 (M) ca	110 ca
56553	Benzo(a)anthracene	9.4 (S) (MM) sol	1.6E+05 (MM) mut	5.8 (MM) mut
100447	Benzyl chloride	59 ca	12 (M) ca	17 ca
111444	bis-2-Chloroethylether	120 ca	3.4 (M) ca	2.6 ca
108861	Bromobenzene	1,700 nc	160 nc	2,100 nc
75274	Bromodichloromethane	31 ca	0.61 (M) ca	48 ca
75252	Bromoform	3,200 ca	45 (M) ca	770 ca
74839	Bromomethane	33 nc	0.90 (M) nc	350 nc
71363	n-Butanol	1.2E+06 nc	20,000 nc	12,000 nc
78933	2-Butanone (MEK)	2.2E+06 (DD) dev	31,000 (DD) dev	1.7E+05 (DD) dev
123864	n-Butyl acetate	68,000 nc	1,100 nc	14,000 nc

Table 6. Residential Volatilization to Indoor Air Criteria (VIAC). The following are unrestricted site-specific criteria that apply to a residential house with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
75650	t-Butyl alcohol	2.1E+05 nc	3,200 nc	2,500 nc
104518	n-Butylbenzene	1,100 nc	550 nc	7,000 nc
135988	sec-Butylbenzene	4,300 nc	3,800 nc	14 nc
98066	t-Butylbenzene	1.8 nc	0.64 (M) nc	14 nc
79925	Camphene	24 nc	14 nc	2,800 nc
75150	Carbon disulfide	1,200 nc	52 (M) nc	24,000 nc
56235	Carbon tetrachloride	7.2 ca	0.31 (M) ca	150 ca
57749	Chlordane	56 (S) (EE) sol	13,000 (EE) st	6.7 (EE) st
108907	Chlorobenzene	720 nc	82 nc	1,700 nc
75683	1-Chloro-1,1-difluoroethane	23,000 nc	2,400 nc	1.7E+06 nc
75003	Chloroethane	8,600 nc	330 nc	1.4E+05 nc
110758	2-Chloroethyl vinyl ether	TX	TX	TX
67663	Chloroform	10 ca	0.26 (M) ca	37 ca
74873	Chloromethane	200 nc	6.9 (M) nc	3,100 nc
91587	beta-Chloronaphthalene	TX	TX	TX
95578	2-Chlorophenol	52,000 (DD) dev	12,000 (DD) dev	600 (DD) dev
95498	o-Chlorotoluene	1,200 nc	200 nc	2,800 nc
74908	Cyanide, Hydrogen	97 nc	1.8 (M) nc	28 nc
110827	Cyclohexane	1,400 nc	320 (M) nc	2.1E+05 nc
108941	Cyclohexanone	2.6E+06 nc	68,000 nc	24,000 nc
72559	4-4'-DDE	40 (S) sol	39,000 ca	8.7 ca
117840	Di-n-octyl phthalate	22 (S) (CC) sol	DATA	16,000 nc
123422	Diacetone alcohol	3.7E+08 nc	5.2E+06 nc	83,000 nc
132649	Dibenzofuran	3,100 (S) sol	7.1E+06 nc	140 nc
124481	Dibromochloromethane	29 (MM) mut	0.40 (MM) (M) mut	14 (MM) mut
96128	Dibromochloropropane	4.5E-04 (MM) (M) (CC) mut	DATA	6.2E-02 (MM) mut

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CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
74953	Dibromomethane	230 nc	3.5 (M) nc	140 nc
95501	1,2-Dichlorobenzene	9,900 nc	1,500 nc	10,000 nc
541731	1,3-Dichlorobenzene	70 nc	10 (M) nc	100 nc
106467	1,4-Dichlorobenzene	160 ca	23 (M) ca	220 ca
75718	Dichlorodifluoromethane	38 nc	12 (M) nc	11,000 nc
75343	1,1-Dichloroethane	88 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	27 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	220 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	62 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	260 nc	12 (M) nc	2,800 nc
78875	1,2-Dichloropropane	56 nc	2.1 (M) nc	140 nc
542756	1,3-Dichloropropene	69 (J) ca	3.1 (M) (J) ca	210 (J) ca
60571	Dieldrin	110 ca	770 ca	0.18 ca
60297	Diethyl ether	24,000 nc	350 nc	35,000 nc
108203	Diisopropyl ether	11,000 (DD) dev	190 (M) (DD) dev	23,000 (DD) dev
108189	Diisopropylamine	72,000 nc	2,900 nc	7,000 nc
127195	N,N-Dimethylacetamide	1.4E+08 nc	3.8E+06 nc	3,500 nc
121697	N,N-Dimethylaniline	2,100 ca	120 ca	71 ca
68122	Dimethylformamide	2.4E+06 nc	46,000 nc	240 nc
123911	1,4-Dioxane	22,000 ca	360 (M) ca	170 ca
115297	Endosulfan	TX	TX	TX
106898	Epichlorohydrin	940 nc	19 (M) nc	35 nc
64175	Ethanol	7.5E+07 (EE) st	1.3E+06 (EE) st	6.3E+05 (EE) st
141786	Ethyl acetate	16,000 nc	210 nc	2,400 nc
637923	Ethyl-tert-butyl ether (ETBE)	22 (CC) nc	DATA	13,000 nc
100414	Ethylbenzene	60 ca	12 (M) ca	340 ca

Table 6. Residential Volatilization to Indoor Air Criteria (VIAC). The following are unrestricted site-specific criteria that apply to a residential house with a basement, the depth to groundwater submitted for this site (i.e. 17.5 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
106934	Ethylene dibromide	4.0 ca	7.4E-02 (M) ca	1.4 ca
86737	Fluorene	1,700 (S) sol	4.7E+05 nc	4,900 nc
50000	Formaldehyde	23,000 (MM) mut	530 (MM) (M) mut	27 (MM) mut
64186	Formic acid	22,000 nc	440 (M) nc	10 nc
76448	Heptachlor	11 ca	3,600 ca	0.65 ca
1024573	Heptachlor epoxide	1.4E-02 (CC) ca	DATA	0.33 ca
142825	n-Heptane	150 (GW) nc	130 nc	1.2E+05 nc
87821	Hexabromobenzene	TX	TX	TX
118741	Hexachlorobenzene (C-66)	4.7 nc	6.7 (M) nc	1.2 nc
87683	Hexachlorobutadiene (C-46)	14 ca	2.5 (M) ca	39 ca
77474	Hexachlorocyclopentadiene (C-56)	1.1 (M) nc	0.32 (M) nc	7.0 nc
67721	Hexachloroethane	64 ca	3.2 (M) ca	85 ca
110543	n-Hexane	29 (GW) nc	25 nc	24,000 nc
591786	2-Hexanone	12,000 nc	210 (M) nc	1,000 nc
78831	Isobutyl alcohol	4.8E+06 nc	79,000 nc	52,000 nc
67630	Isopropyl alcohol	6.0E+05 nc	9,800 nc	7,000 nc
98828	Isopropyl benzene	13 ca	3.8 (M) ca	81 ca
58899	Lindane	TX	TX	TX
Varies	Mercury (Total)	1.9 nc	22 nc	10 nc
74828	Methane	10,000 (AA)	DATA	8.4E+06 (GG)
67561	Methanol	7.0E+07 (DD) dev	1.4E+06 (DD) dev	6.7E+05 (DD) dev
109864	2-Methoxyethanol	89,000 nc	1,500 nc	38 nc
109024	N-Methyl-morpholine	TX	TX	TX
108101	4-Methyl-2-pentanone (MIBK)	8.1E+05 (DD) dev	12,000 (DD) dev	1.0E+05 (DD) dev
1634044	Methyl-tert-butyl ether (MTBE)	5,300 ca	74 (M) ca	3,300 ca
96377	Methylcyclopentane	67 nc	29 (M) nc	24,000 nc

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CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
75092	Methylene chloride	5,000 nc	130 nc	21,000 nc
91576	2-Methylnaphthalene	1,800 nc	1,700 nc	350 nc
2385855	Mirex	TX	TX	TX
91203	Naphthalene	100 ca	67 (M) ca	25 ca
98953	Nitrobenzene	1,000 ca	170 (M) ca	21 ca
88755	2-Nitrophenol	0.12 (M) (CC) nc	DATA	1.7 nc
608935	Pentachlorobenzene	8.6E-03 (M) (CC) nc	DATA	3.5 nc
82688	Pentachloronitrobenzene	8.5 (M) (CC) nc	DATA	380 nc
109660	Pentane	40 (M) (GW) nc	36 (M) nc	35,000 nc
109682	2-Pentene	TX	TX	TX
335671	Perfluorooctanoic acid	TX	TX	TX
85018	Phenanthrene	220 nc	1,700 nc	3.5 nc
110894	Piperidine	3.5E+07 nc	2.1E+06 nc	2.4E+05 nc
1336363	Polychlorinated biphenyls (PCBs)	3.1E-02 (M) (CC) (J) ca	DATA	8.5 (J) ca
79094	Propionic acid	1.3E+07 nc	2.2E+05 nc	10,000 nc
71238	Propyl alcohol	2.4E+06 (DD) dev	40,000 (DD) dev	24,000 (DD) dev
103651	n-Propylbenzene	5,400 (DD) dev	1,800 (DD) dev	33,000 (DD) dev
129000	Pyrene	140 (S) sol	2.5E+07 nc	3,500 nc
110861	Pyridine	7,300 nc	540 nc	120 nc
100425	Styrene	740 ca	150 ca	1,500 ca
95943	1,2,4,5-Tetrachlorobenzene	120 nc	70 (M) nc	35 nc
630206	1,1,1,2-Tetrachloroethane	93 ca	3.2 (M) ca	110 ca
79345	1,1,2,2-Tetrachloroethane	66 ca	2.7 (M) ca	15 ca
127184	Tetrachloroethylene	130 (EE) st	6.2 (M) (EE) st	1,400 (EE) st
109999	Tetrahydrofuran	6.9E+05 nc	13,000 nc	70,000 nc
632224	1,1,3,3-Tetramethylurea	2,700 (CC) nc	DATA	28 nc

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CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
509148	Tetranitromethane	0.56 (M) ca	7.6E-02 (M) ca	5.6E-02 ca
108883	Toluene	30,000 nc	3,700 nc	1.7E+05 nc
2303175	Triallate	530 (DD) (CC) dev	DATA	6,700 (DD) dev
102829	Tributylamine	6,000 nc	3,300 nc	240 nc
87616	1,2,3-Trichlorobenzene	2,100 nc	830 nc	940 nc
120821	1,2,4-Trichlorobenzene	130 nc	53 (M) nc	70 nc
71556	1,1,1-Trichloroethane	11,000 (EE) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	11 nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	8.1 (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
75694	Trichlorofluoromethane	160 nc	19 (M) nc	15,000 nc
96184	1,2,3-Trichloropropane	47 nc	2.6 (M) nc	10 nc
76131	1,1,2-Trichloro-1,2,2-trifluoroethane	3,600 nc	860 nc	6.6E+05 nc
1582098	Trifluralin	180 (S) (CC) sol	DATA	1.0E+05 nc
540841	2,2,4-Trimethyl pentane	160 (GW) nc	130 (M) nc	1.2E+05 nc
107404	2,4,4-Trimethyl-2-pentene	TX	TX	TX
526738	1,2,3-Trimethylbenzene	1,100 (JT) nc	270 (JT) nc	2,100 (JT) nc
95636	1,2,4-Trimethylbenzene	590 (JT) nc	150 (JT) nc	2,100 (JT) nc
108678	1,3,5-Trimethylbenzene	420 (JT) nc	100 (JT) nc	2,100 (JT) nc
126727	tris(2,3-Dibromopropyl)phosphate	7.4E-02 (M) (CC) ca	DATA	1.6 ca
108054	Vinyl acetate	13,000 nc	160 (M) nc	7,000 nc
75014	Vinyl chloride	1.2 (MM) mut	8.2E-02 (MM) (M) mut	54 (MM) mut
1330207	Xylenes	1,600 (J) nc	280 (J) nc	7,600 (J) nc

FOOTNOTES

**Soil gas site-specific volatilization to indoor air (SSVIAC) are applicable for all depths.

- Acceptable Air Values (AAV) endpoint basis used for SSVIAC: (**ca**) = Carcinogenic; (**nc**) = Non-Carcinogenic; (**dev**) = Developmental; (**mut**) = Mutagenic cancer; (**st**) = Short-term (i.e., less than chronic exposure).
- Footnote **(#)**: Acceptable air concentrations (AAC) cannot be adjusted to a 12-hour exposure time for hazardous substance.
- Footnote **AA**: Health-based groundwater SSVIAC are not available due to insufficient toxicological data. Dissolved-phase methane in groundwater is not explosive; however, if liberated and allowed to accumulate in an enclosed structure the principle health and safety concerns are explosive, flammable, and asphyxiant properties of gas phase methane. The acceptable groundwater concentration is the flammability and explosivity screening level (**FESL**) of 10,000 µg/L.
- Footnote **C**: The health-based SSVIAC exceeds the chemical-specific soil saturation screening level (**Csat**). The person proposing or implementing response activity must document whether additional response activity is required to control non aqueous phase liquid (**NAPL**) to protect against risks associated with NAPL by using methods appropriate for the NAPL present.
- Footnote **CC**: Insufficient chemical-physical input parameters have been identified to allow the development of a health-based SSVIAC using standard methods. The health based SSVIAC for groundwater is developed based solely on the approach that the department uses for shallow groundwater. If groundwater detections are present, soil vapor may be the most appropriate media to evaluate risk posed from the VIAP.
- Footnote **DATA**: Insufficient physical chemical parameters to calculate a health based SSVIAC for specified media. If detections are present in specified media, health-based soil vapor SSVIAC should be used to evaluate risk.
- Footnote **DD**: Hazardous substance causes developmental effects. Residential SSVIAC are protective of both prenatal exposure using a pregnant female receptor and postnatal exposure using a child receptor. Nonresidential SSVIAC are protective of prenatal exposure using a pregnant female receptor. Prenatal developmental effects may occur after an acute (i.e. short-term) or full-term exposure.
- Footnote **EE**: The acceptable air concentration (**AAC**) for the volatile hazardous substances is not derived using standard methods. The hazardous substance may cause adverse human health effects for less than chronic exposures (i.e. short-term or acute). The AAC for these hazardous substances is the acute or intermediate minimum risk level (MRL) developed by the Agency for Toxic Substances and Disease Registry (ATSDR), a United States Environmental Protection Agency Integrated Risk Information System (IRIS) acute reference concentration, or EGLE's Air Quality Division acute initial threshold screening level (ITSL).
- Footnote **FF**: The AAC for the volatile hazardous substances are based on toxicity values that have been identified to have the potential to cause adverse human health effects for less than chronic exposures (i.e. short-term or acute). The short-term exposure for shallow groundwater health based SSVIAC are based on modification of the standard methods by the department to develop applicable shallow groundwater values.
- Footnote **GG**: Health-based SSVIAC for soil vapor are not available due to insufficient toxicological data. The soil vapor value addresses the health and safety concerns of explosive, flammable, and asphyxiant properties of gas phase methane. The acceptable soil vapor concentration is derived based on 25% of the lower explosive level (**LEL**) for methane.
- Footnote **GW**: The calculated health based SSVIAC for a hazardous substance based upon shallow groundwater is considered protective when it is greater than the calculated value for groundwater.
- Footnote **ID**: Requires further evaluation to determine the appropriate media to sample.
- Footnote **J**: Hazardous substance may be present in several isomer forms. Isomer-specific concentrations must be added together for comparison to criteria.
- Footnote **JT**: Hazardous substance may be present in several isomer forms. The health-based SSVIAC may be used for the individual isomer provided that it is the sole isomer detected; however, when multiple isomers are detected in a medium, the isomer-specific concentrations must be added together and compared to the most restrictive health-based SSVIAC of the detected isomers.
- Footnote **M**: The health based SSVIAC may be below target detection limits (**TDL**). In accordance with Sec. 20120a(10) when the TDL for a hazardous substance is greater than the developed health-based SSVIAC, the TDL is used to evaluate the risk posed from the pathway.
- Footnote **MM**: Hazardous substance is a carcinogen with a mutagenic mode of action. The cancer potency values used in calculating health-based SSVIAC are modified using age-dependent adjustment factors for those carcinogenic chemicals identified as mutagenic.
- Footnote **NA**: The hazardous substance does not meet the department's definition of a volatile; therefore, no health based SSVIAC were developed.
- Footnote **NR**: The hazardous substance has not been previously evaluated by the Remediation and Redevelopment Division Toxicology Unit. The identification, collection, and evaluation of toxicological literature and chemical-physical data cannot be completed within the timeframe requested.
- Footnote **S**: Calculated health-based SSVIAC exceeds the hazardous substance-specific water solubility limit; therefore, the water solubility limit is used to evaluate the risk posed from the pathway.
- Footnote **TX**: The Remediation and Redevelopment Division Toxicology Unit has not identified an inhalation toxicity value for the hazardous substance.

Appendix D

Mann-Kendall Calculations and Trend Graphs



TABLE D-1
Groundwater Summary Statistics and Trend Results
RACER Pontiac North Campus
March, 2024

Well ID	Analyte	Date Range	Figure	FOD	Detected Results Summary ¹				Mann-Kendall Test ²				Sen's Estimator of Slope ²			
					Range	Mean	Median	SD	Result ⁴	MK Result Note	P-Value	S Value	Result ⁴	Sen's Result Note	Slope (Units/Day)	95% CI (Units/Day)
MW-02-17	Tetrachloroethene	04/17 - 12/23	D-1	14 / 15	3 - 12	6.9	6.5	3	NST	--	0.061	-32	NST	--	-0.00202	-0.00377 to 0.0000499
MW-02-17	Trichloroethene	04/17 - 12/23	D-2	14 / 15	1 - 7	3.4	2	2	UP	--	0.025	38	NT	--	0.00140	0 to 0.00233
MW-05-18	cis-1,2-Dichloroethene	10/18 - 12/23	D-3	13 / 13	3 - 15	9.6	11	3.2	NST	--	0.402	-5	NST	--	0	-0.00453 to 0.00385
MW-06-20	cis-1,2-Dichloroethene	09/20 - 11/23	D-4	14 / 14	3 - 10	6.5	7	1.7	NST	--	0.214	-15	NST	--	-0.000992	-0.00354 to 0.00270
MW-06-20	Trichloroethene	09/20 - 11/23	D-5	14 / 14	7 - 14	9.7	9	2.1	UP	--	0.031	34	NT	--	0.00162	0 to 0.00549
MW-07-20	cis-1,2-Dichloroethene	08/20 - 12/23	D-6	10 / 10	6 - 15	10.9	11	3.2	NST	--	0.127	-14	NST	--	-0.00549	-0.00930 to 0.00277
MW-07-20	Trichloroethene	08/20 - 12/23	D-7	10 / 10	1 - 3	2.2	2	0.63	NST	--	0.146	-13	NT	--	0	-0.00185 to 0
MW-08-21	cis-1,2-Dichloroethene	06/21 - 11/23	D-8	10 / 11	2 - 12	7.8	9.5	3.9	NST	--	0.239	-10	NST	--	-0.00322	-0.0126 to 0.00524
MW-08-21	Trichloroethene	06/21 - 11/23	D-9	11 / 11	9 - 12	10.5	10	1.1	UP	--	0.030	24	NT	--	0.00271	0 to 0.00549
MW-09-22	Tetrachloroethene	01/22 - 11/23	D-10	9 / 9	48 - 195	118	122	51.8	NST	--	0.306	6	NST	--	0.0696	-0.223 to 0.356
MW-09-22	Trichloroethene	01/22 - 11/23	D-11	8 / 9	1 - 5	3.3	3.5	1.3	NST	--	0.060	16	NST	--	0.00348	-0.000451 to 0.00820
MW-14-22	cis-1,2-Dichloroethene	03/22 - 11/23	D-12	8 / 8	5 - 30	14	12.5	7.8	NST	--	0.199	8	NST	--	0.0175	-0.0213 to 0.0427
MW-14-22	Tetrachloroethene	03/22 - 11/23	D-13	8 / 8	52 - 212	125	99	62.7	UP	--	0.003	22	UP	--	0.209	0.119 to 0.360
MW-14-22	Trichloroethene	03/22 - 11/23	D-14	8 / 8	12 - 22	17.8	18.5	3.2	UP	--	0.043	15	NST	--	0.00995	-0.00308 to 0.0225
MW-16-22	cis-1,2-Dichloroethene	11/22 - 11/23	D-15	5 / 5	8 - 120	42.6	20	47.2	NST	5a	0.242	-4	NA	5a	NA	NA
MW-16-22	Tetrachloroethene	11/22 - 11/23	D-16	5 / 5	94 - 306	210	180	91.2	DWN	5a	0.008	-10	NA	5a	NA	NA
MW-16-22	Trichloroethene	11/22 - 11/23	D-17	5 / 5	94 - 306	210	180	91.2	DWN	5a	0.008	-10	NA	5a	NA	NA
MWF16-05	Tetrachloroethene	10/17 - 11/23	D-18	12 / 12	12 - 730	484	495	198	NST	--	0.419	4	NST	--	0.0206	-0.316 to 0.269
MWF16-05	Trichloroethene	10/17 - 11/23	D-19	8 / 12	3 - 40	25.8	30	10.9	DWN	--	0.050	-24	NT	--	-0.0140	-0.0419 to 0
MWF16-06	cis-1,2-Dichloroethene	04/17 - 11/23	D-20	12 / 12	7 - 150	43.8	24.5	43	NST	--	0.186	-14	NST	--	-0.00737	-0.0866 to 0.00827
MWF16-06	Tetrachloroethene	04/17 - 11/23	D-21	12 / 12	36 - 127	66.8	64.5	26.6	DWN	--	0.050	-25	NST	--	-0.0262	-0.0680 to 0.000435
MWF16-06	Trichloroethene	04/17 - 11/23	D-22	12 / 12	5 - 30	12.8	10.5	7.9	DWN	--	0.011	-34	DWN	--	-0.00431	-0.0168 to -0.00137
MWF16-12	Tetrachloroethene	03/21 - 11/23	D-23	6 / 6	9 - 50	33.8	38	14.7	NST	5a	0.136	-7	NST	5a	-0.0245	-0.0938 to 0.0170
MWF16-15	cis-1,2-Dichloroethene	04/17 - 12/23	D-24	8 / 8	1 - 15	7.4	6	5	NST	--	0.500	1	NST	--	0.00106	-0.00651 to 0.00547
MWF16-15	Trichloroethene	04/17 - 12/23	D-25	7 / 8	2 - 4	2.9	3	0.9	UP	--	0.012	19	NT	--	0.000936	0 to 0.00286
MWF16-16	cis-1,2-Dichloroethene	10/17 - 11/23	D-26	11 / 14	2 - 20	14	15	6.3	NST	--	0.250	13	NST	--	0.000449	-0.00562 to 0.0137
MWF16-16	Tetrachloroethene	10/17 - 11/23	D-27	14 / 14	14 - 490	312	315	135	UP	--	0.016	40	UP	--	0.152	0.00763 to 0.192
MWF16-16	Trichloroethene	10/17 - 11/23	D-28	7 / 14	4 - 20	11.1	10	6.1	NST	--	0.278	-11	NST	5c	0	-0.00887 to 0.0000717
MWF16-18	cis-1,2-Dichloroethene	03/21 - 11/23	D-29	11 / 11	20 - 130	79.1	70	34.5	UP	--	<0.001	44	UP	--	0.106	0.0795 to 0.121
MWF16-18	Tetrachloroethene	03/21 - 11/23	D-30	11 / 11	740 - 1350	1110	1090	176	NST	--	0.292	-8	NST	--	-0.179	-0.496 to 0.347
MWF16-18	Trichloroethene	03/21 - 11/23	D-31	11 / 11	10 - 30	20.9	20	5.4	UP	--	0.006	26	NT	--	0	0 to 0.0166
MWF16-22	cis-1,2-Dichloroethene	09/20 - 11/23	D-32	8 / 8	5 - 54	14.4	9.5	16.3	UP	--	0.012	19	UP	--	0.00897	0.00161 to 0.0427
MWF16-22	Tetrachloroethene	09/20 - 11/23	D-33	8 / 8	69 - 285	102	76.5	74	NST	--	0.114	11	NST	--	0.00569	-0.00673 to 0.163
MWF16-22	Trichloroethene	09/20 - 11/23	D-34	8 / 8	2 - 13	3.5	2	3.9	NST	--	0.072	13	NT	--	0	0 to 0.00380
MWF16-23	cis-1,2-Dichloroethene	10/17 - 11/23	D-35	17 / 17	2 - 21	9.1	10	5.4	DWN	--	0.024	-48	NT	--	-0.00549	-0.00993 to 0
MWF16-23	Trichloroethene	10/17 - 11/23	D-36	17 / 17	9 - 23	17.4	17	3.5	NST	--	0.238	-18	NST	--	-0.00170	-0.00548 to 0.00134
MWF16-25	cis-1,2-Dichloroethene	10/18 - 11/23	D-37	13 / 13	5 - 43	22.4	16	15.1	UP	--	<0.001	68	UP	--	0.0280	0.0173 to 0.0398
MWF7-02	cis-1,2-Dichloroethene	04/17 - 06/23	D-38	11 / 11	1 - 3	2.4	2	0.67	DWN	--	0.028	-23	NT	--	-0.000488	-0.00106 to 0
MWF7-02	Tetrachloroethene	04/17 - 06/23	D-39	11 / 11	26 - 115	69	77	30	UP	--	0.001	40	UP	--	0.0357	0.0231 to 0.0457
MWF7-02	Trichloroethene	04/17 - 06/23	D-40	11 / 11	3 - 5	3.6	4	0.67	NST	--	0.058	19	NT	--	0	0 to 0.000975



Well ID	Analyte	Date Range	Figure	FOD	Detected Results Summary ¹				Mann-Kendall Test ²				Sen's Estimator of Slope ²			
					Range	Mean	Median	SD	Result ⁴	MK Result Note	P-Value	S Value	Result ⁴	Sen's Result Note	Slope (Units/Day)	95% CI (Units/Day)
MWOS-08	cis-1,2-Dichloroethene	09/20 - 11/23	D-41	13 / 13	1 - 6	3	3	1.6	DWN	--	0.045	-28	NT	--	-0.00215	-0.00498 to 0
MWOS-09R	cis-1,2-Dichloroethene	11/21 - 11/23	D-42	10 / 10	19 - 28	23.7	22.5	3.4	NST	--	0.242	-9	NST	--	-0.00161	-0.0162 to 0.00562
MWOS-09R	Tetrachloroethene	11/21 - 11/23	D-43	10 / 10	10 - 17	13.4	13.5	2.3	NST	--	0.168	12	NST	--	0.00311	-0.00536 to 0.0119
MWOS-09R	Trichloroethene	11/21 - 11/23	D-44	10 / 10	3 - 5	3.7	3.5	0.82	NST	--	0.431	-3	NST	--	0	-0.00319 to 0.00160
MWOS-10	cis-1,2-Dichloroethene	11/21 - 11/23	D-45	10 / 10	4 - 9	6.8	7	1.8	NST	--	0.332	6	NST	--	0.00183	-0.00608 to 0.00684
MWOS-10	Trichloroethene	11/21 - 11/23	D-46	10 / 10	7 - 12	9.2	9	1.8	NST	--	0.300	7	NST	--	0.00177	-0.00921 to 0.00686
TW-12-22	cis-1,2-Dichloroethene	01/22 - 11/23	D-47	7 / 7	32 - 85	53.3	51	18.7	NST	5a	0.191	-7	NST	5a	-0.0500	-0.0954 to 0.0606
TW-12-22	Trichloroethene	01/22 - 11/23	D-48	7 / 7	3 - 13	6.6	6	3.1	NST	5a	0.334	-4	NST	5a	-0.00313	-0.00853 to 0.0142
Unknown-01	Tetrachloroethene	04/17 - 12/23	D-49	6 / 6	23 - 45	34.5	35	9.6	NST	5a	0.360	3	NST	5a	0.00598	-0.0362 to 0.0545

Abbreviations:

-- insufficient data for calculating statistics (n < 4) or not available
FOD = frequency of detection (# detects / # samples)
mean = arithmetic mean
SD = standard deviation

NST = no significant trend
NT = no trend
DWN = downward trend
UP = upward trend

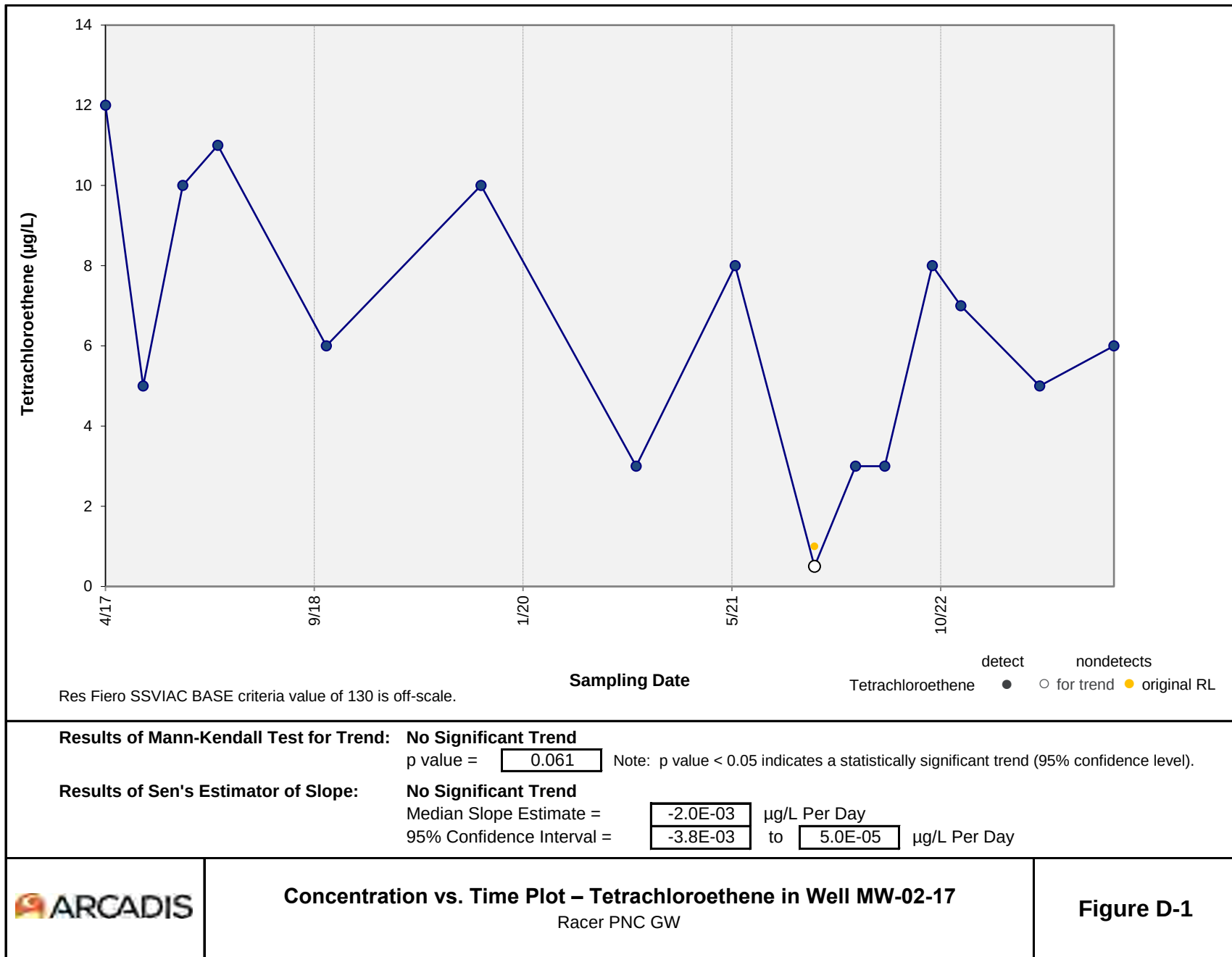
H₀ = null hypothesis: no significant trend (slope = 0)
H_a = alternative hypothesis: significant trend (slope ≠ 0)
95% CI = 95% confidence interval

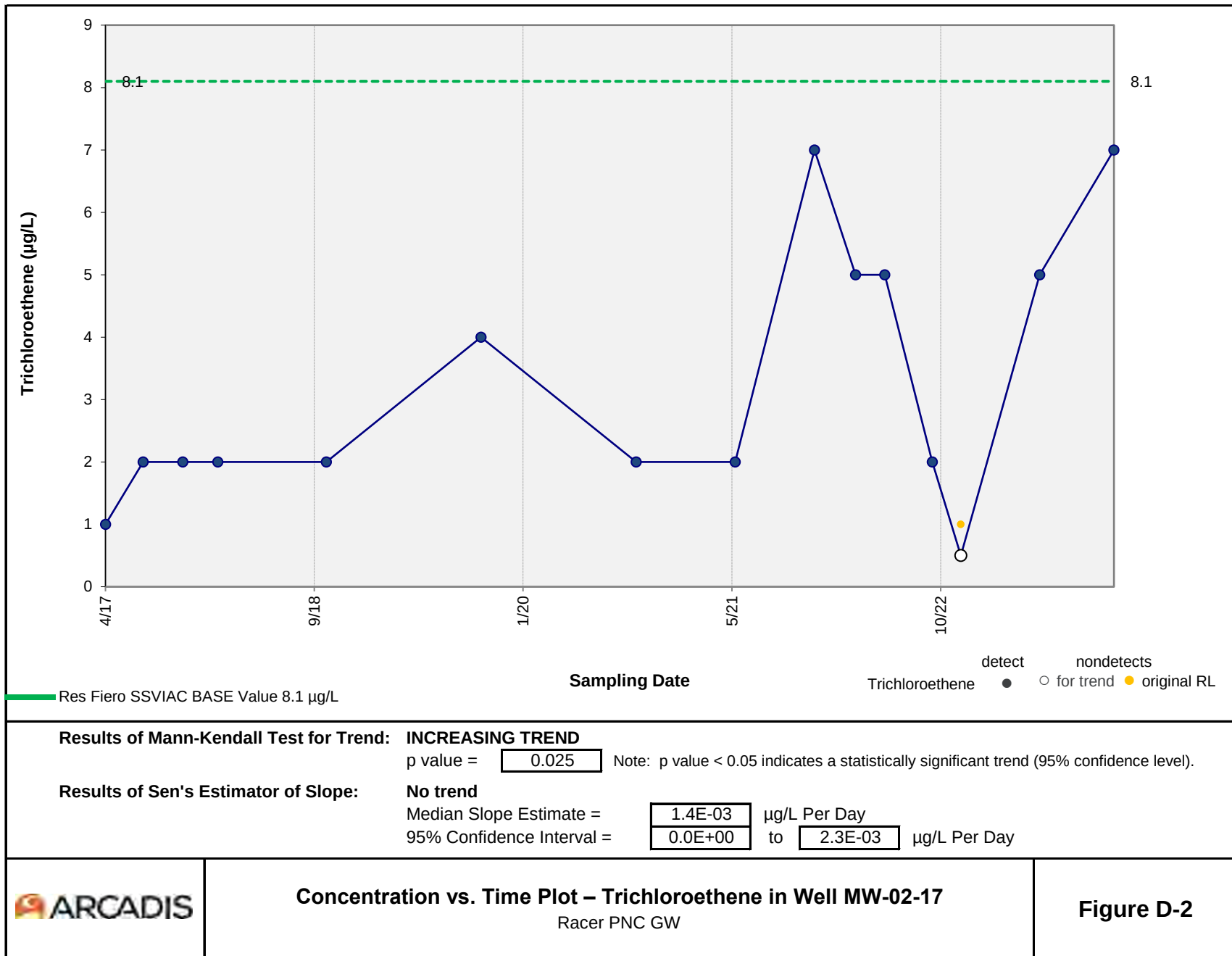
Notes:

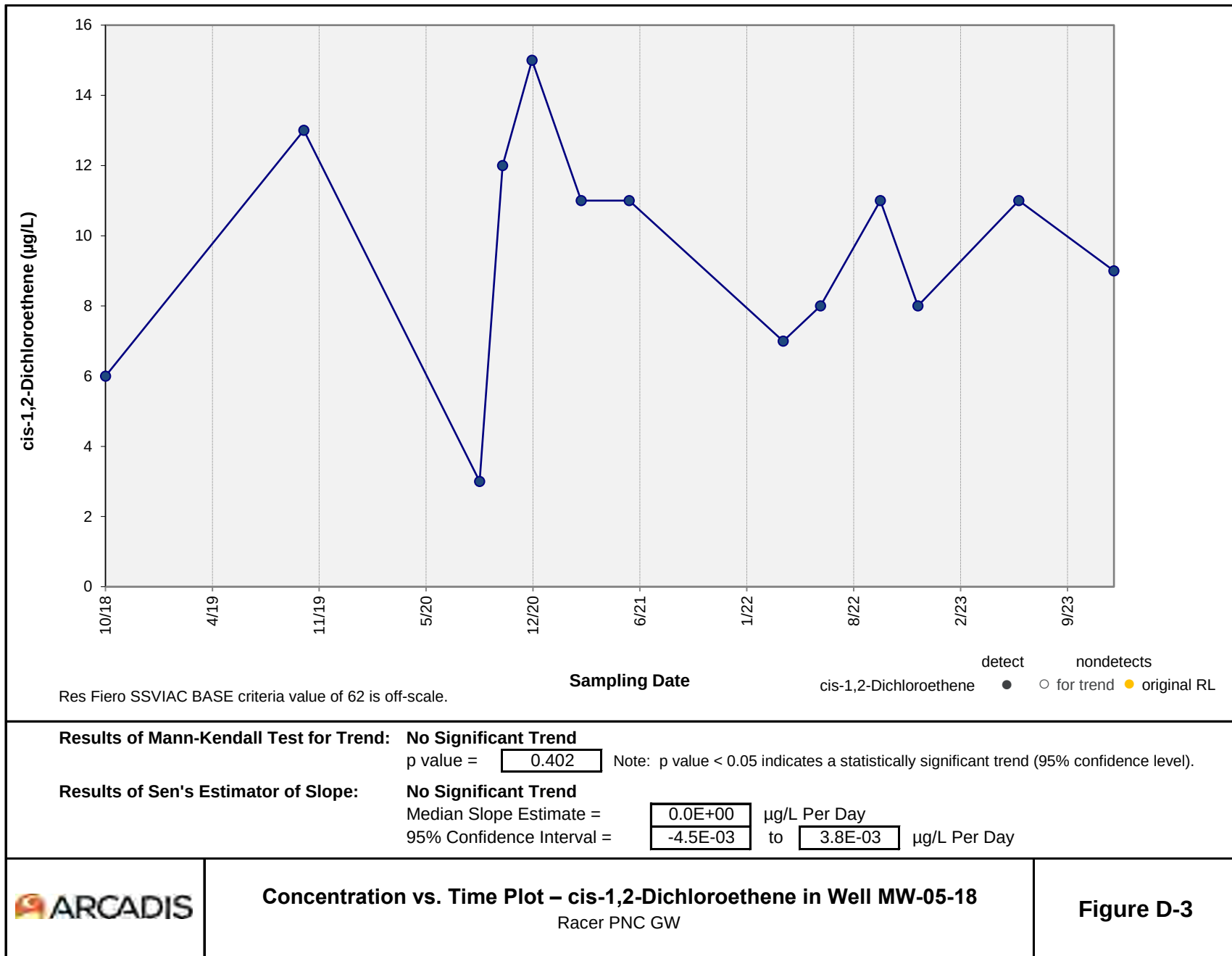
1. All analytical results are in µg/L. Result values less than 10 are reported to 2 significant figures; values greater than 10 are reported to 3 significant figures.
2. Trend results are presented when at least four samples and one detected value are available. Significance of trends evaluated at 95% confidence (alpha = 0.05).
3. Non-detects were assigned a common value less than the minimum detected value, equal to half the minimum reporting limit (RL) in the dataset (USEPA, 2009).
If half the minimum RL was greater than the minimum detected value, then half the minimum detect was assigned.
4. Statistically significant trend defined as having p-value ≤ 0.05, or 95% confidence.
- 5a. MK and Sen's Trend results for datasets with fewer than 8 samples may not be reliable and should be treated with caution.

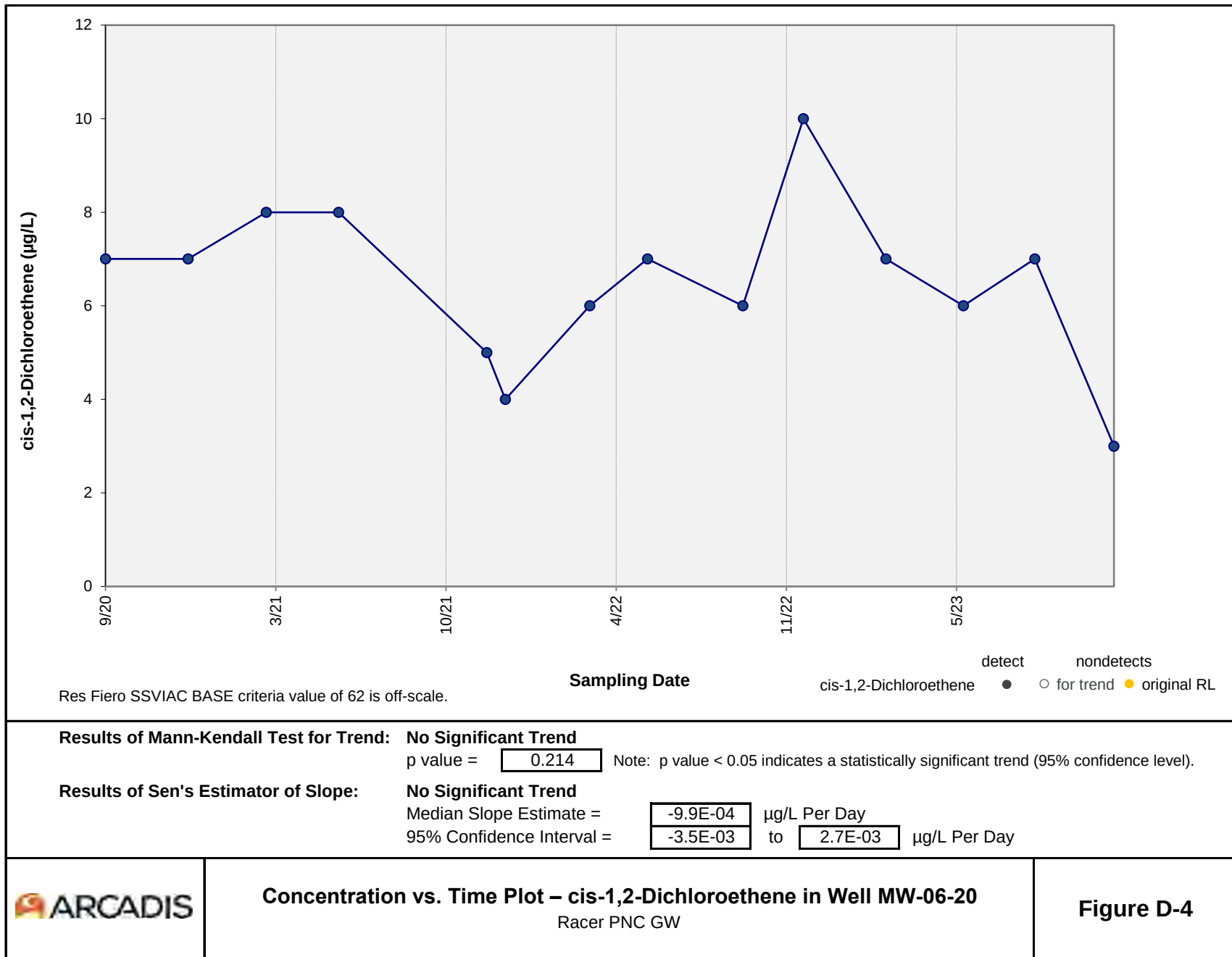
Reference:

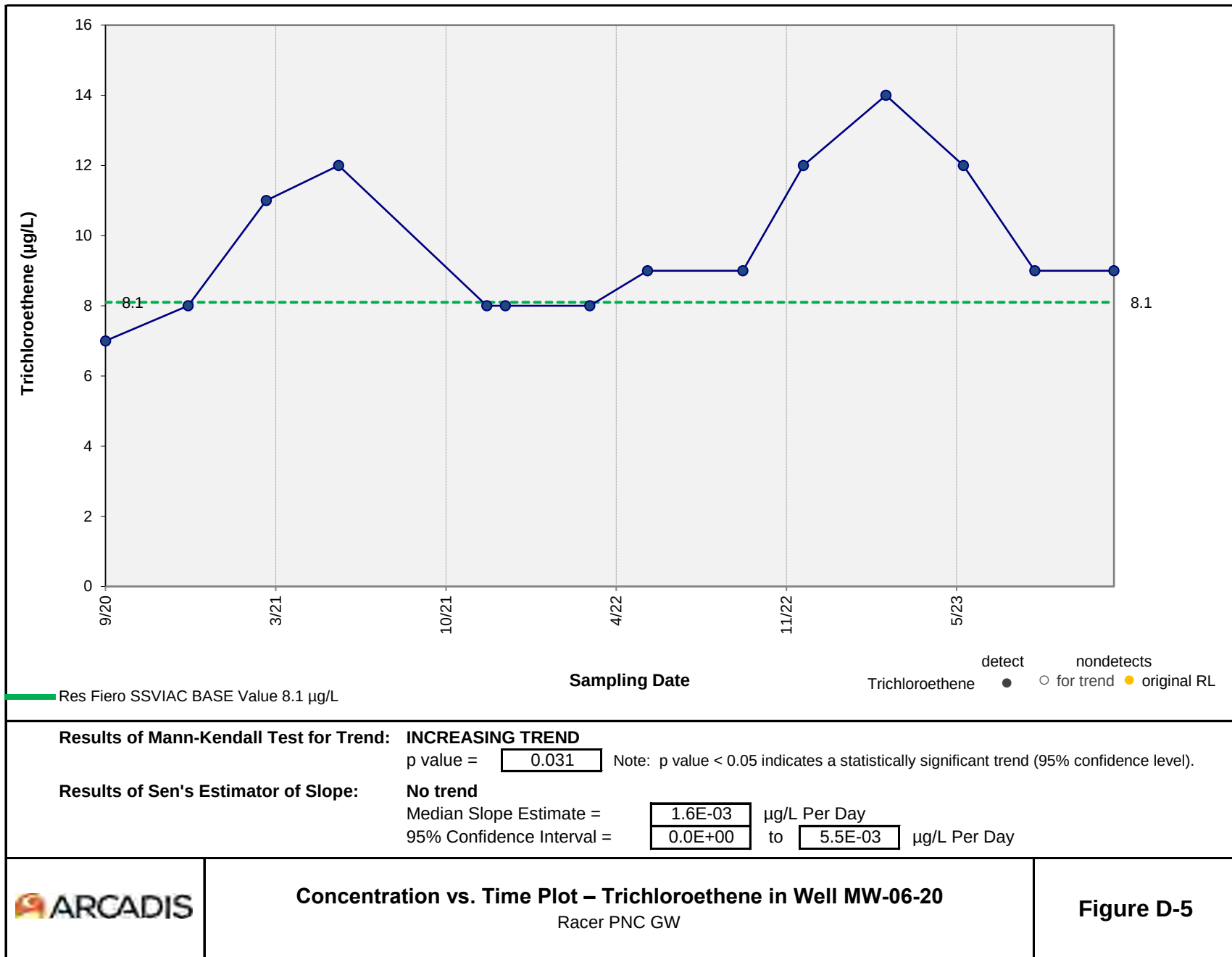
USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Unified Guidance. EPA/530/R-09/007, 2009.

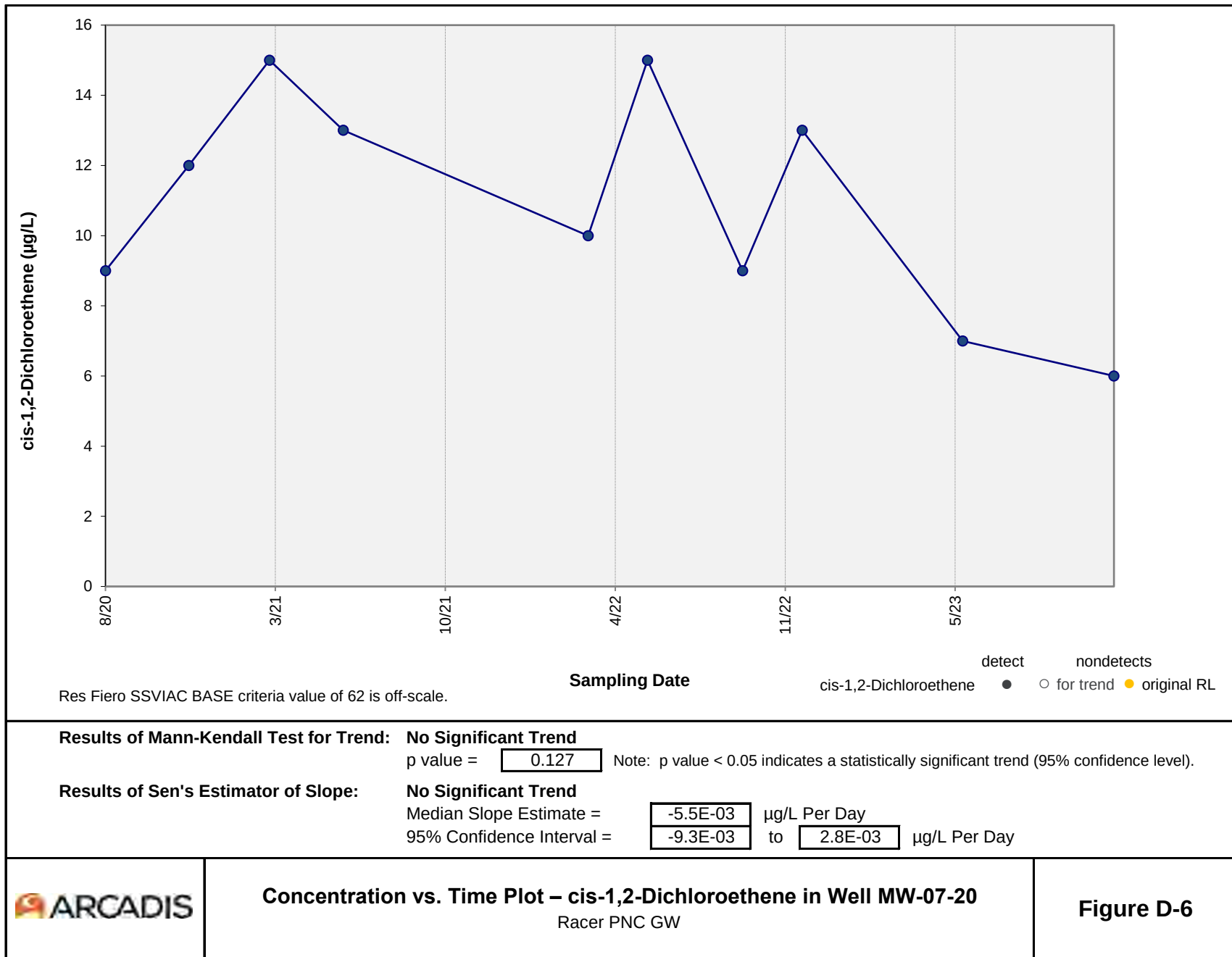


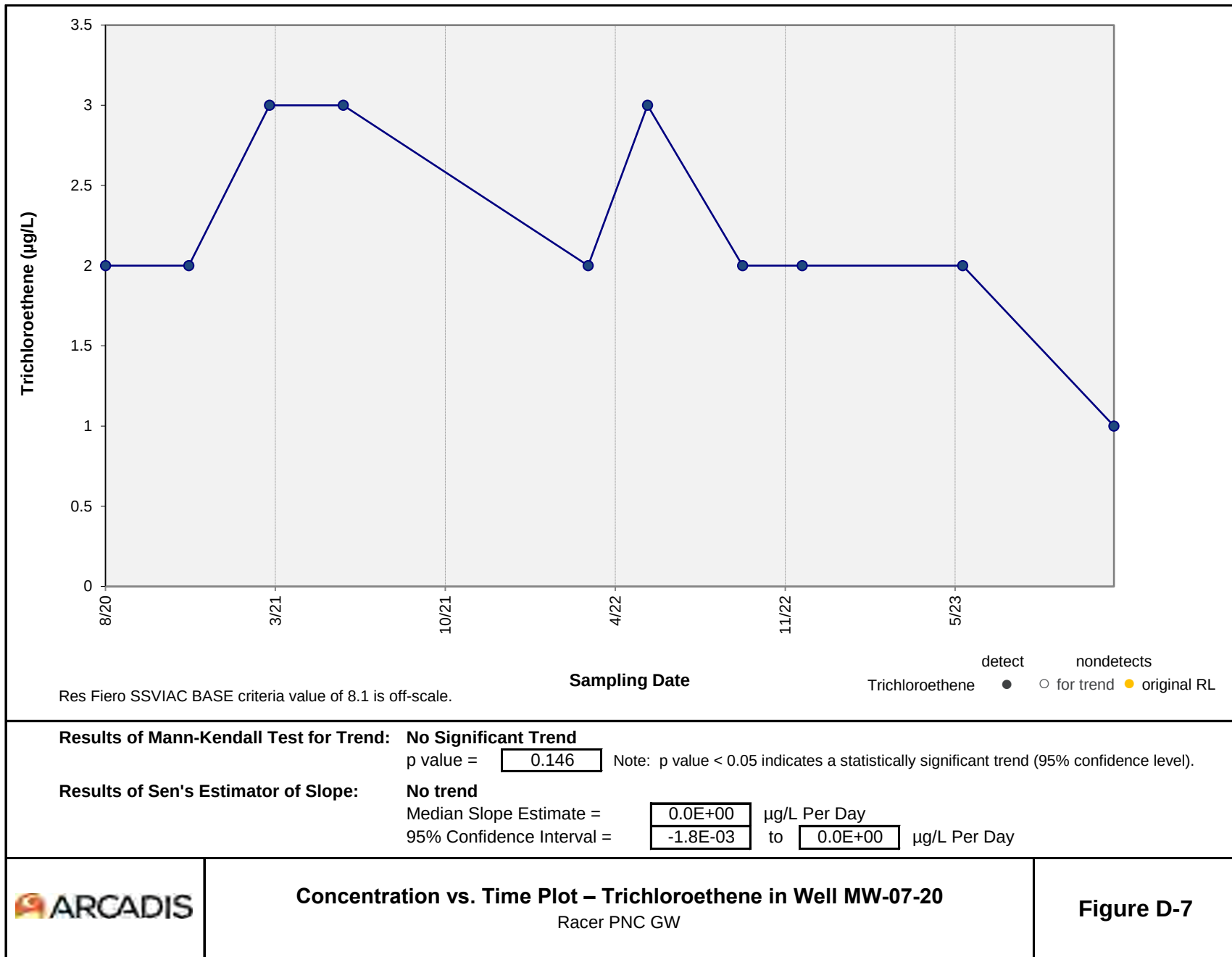


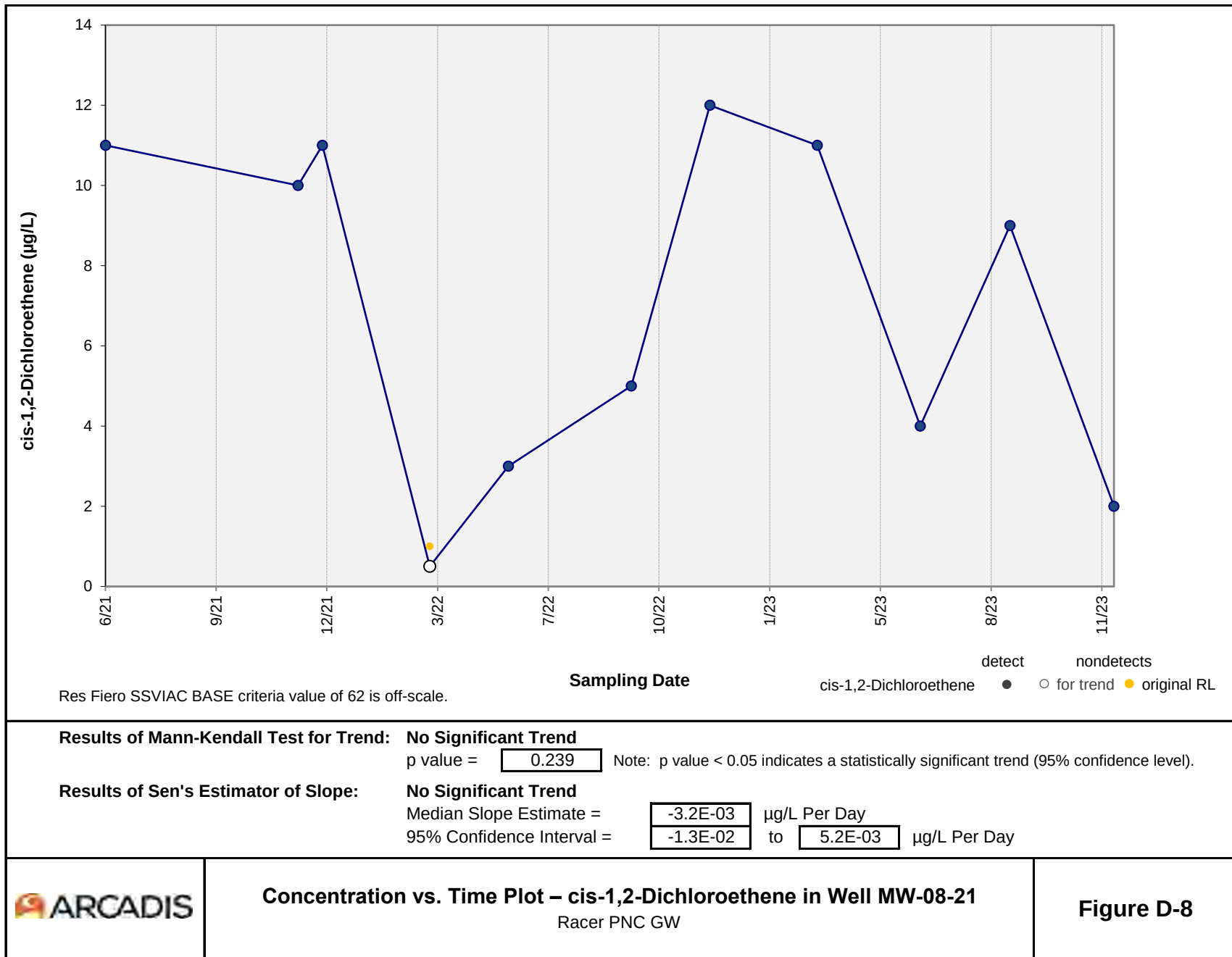


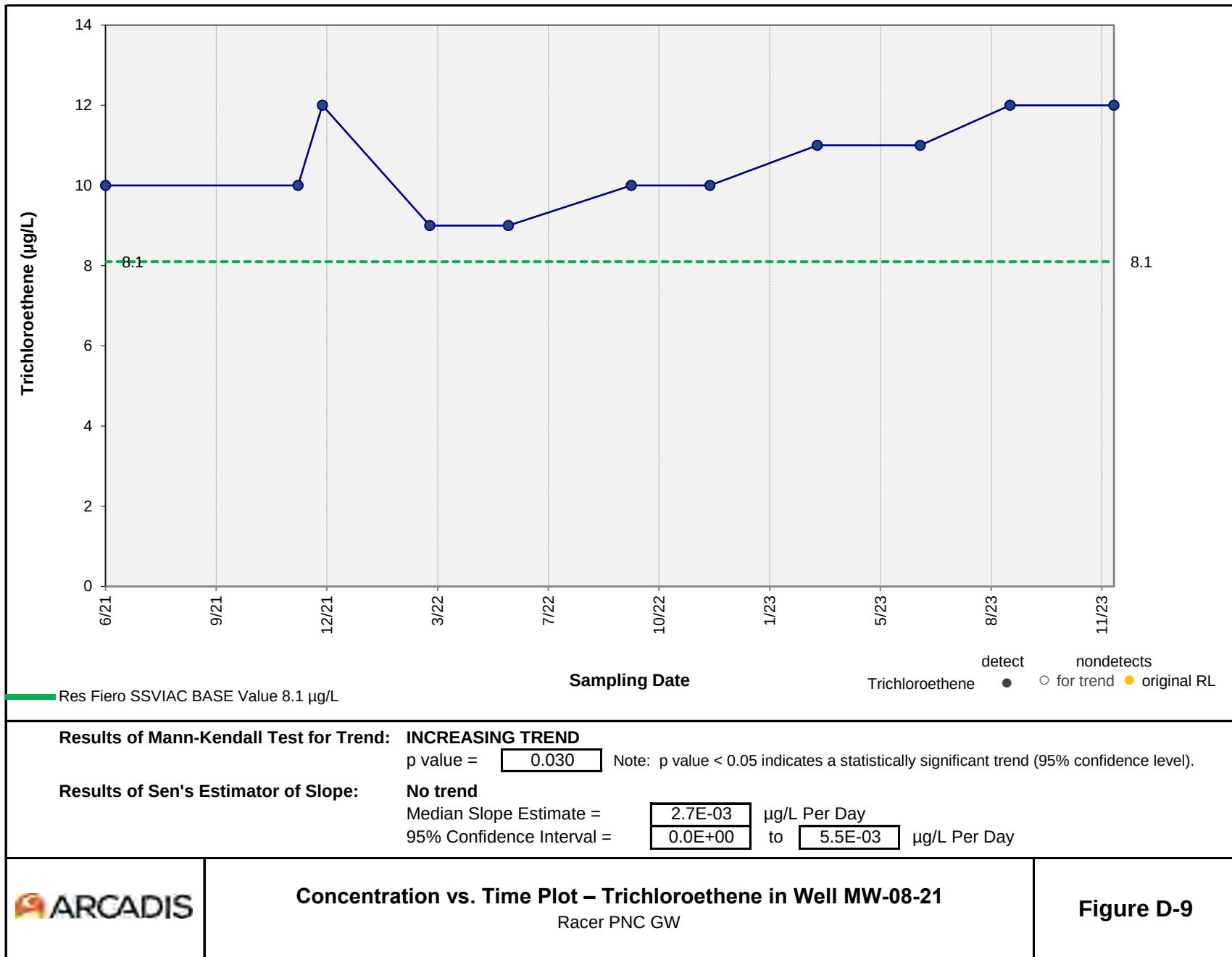


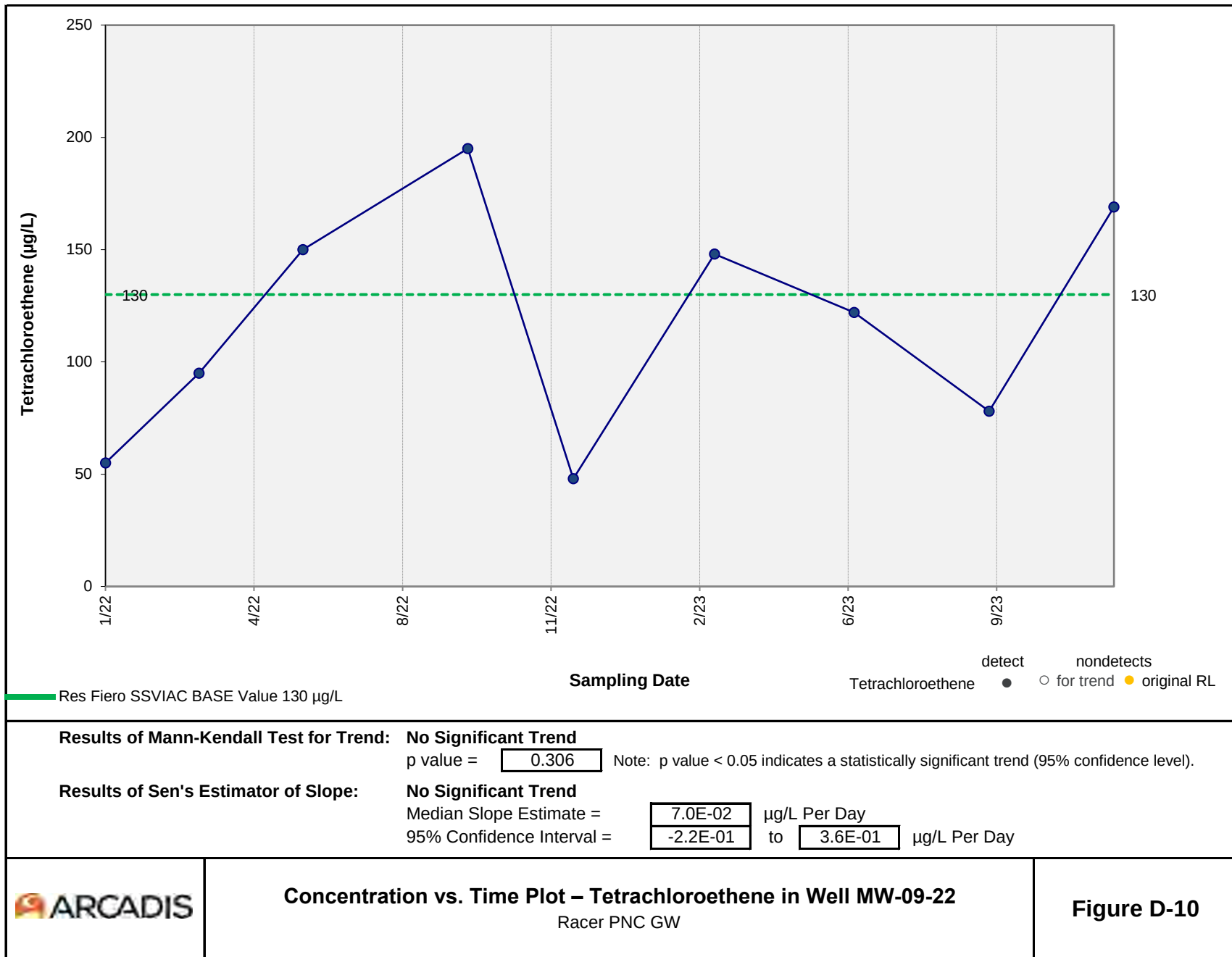


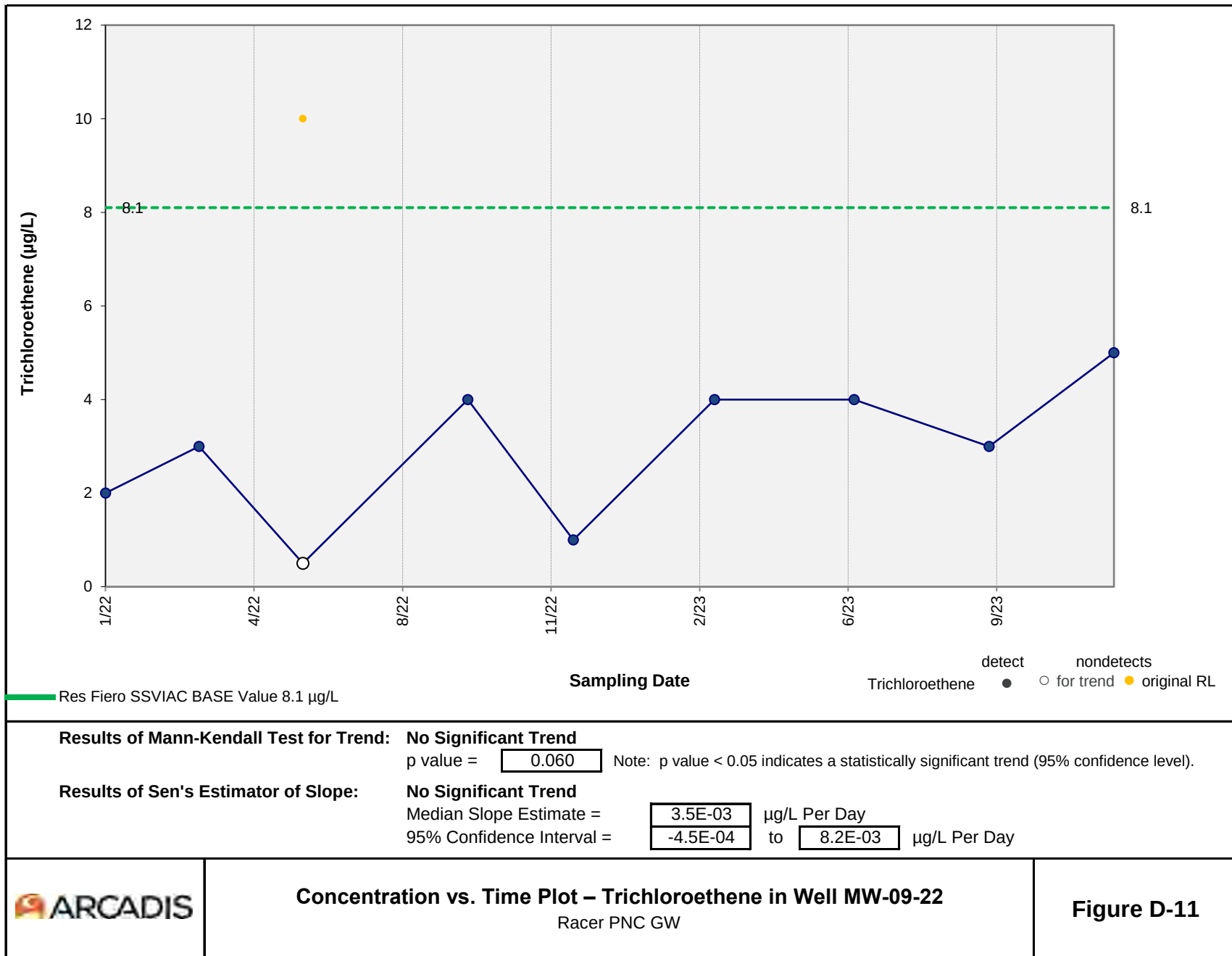


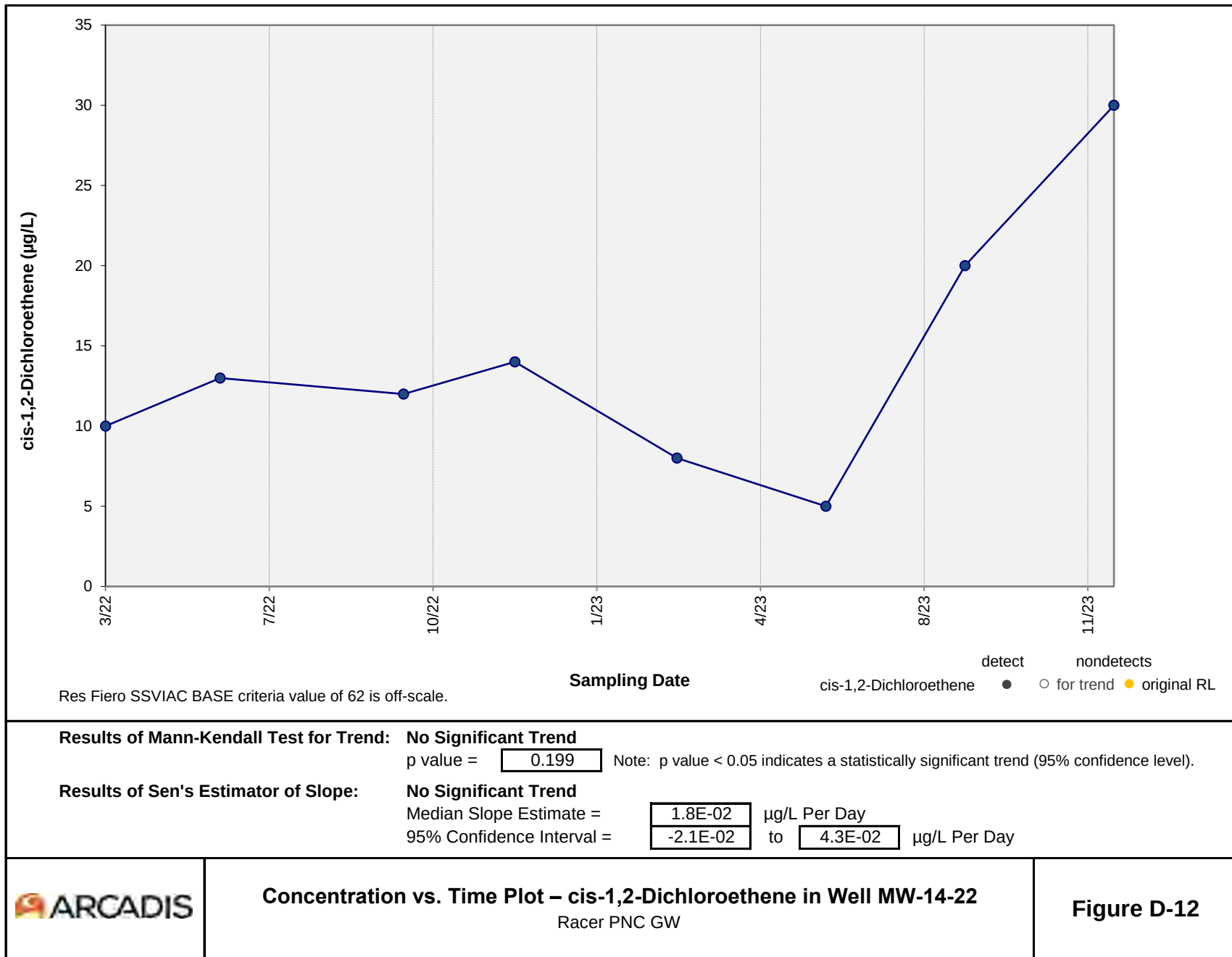


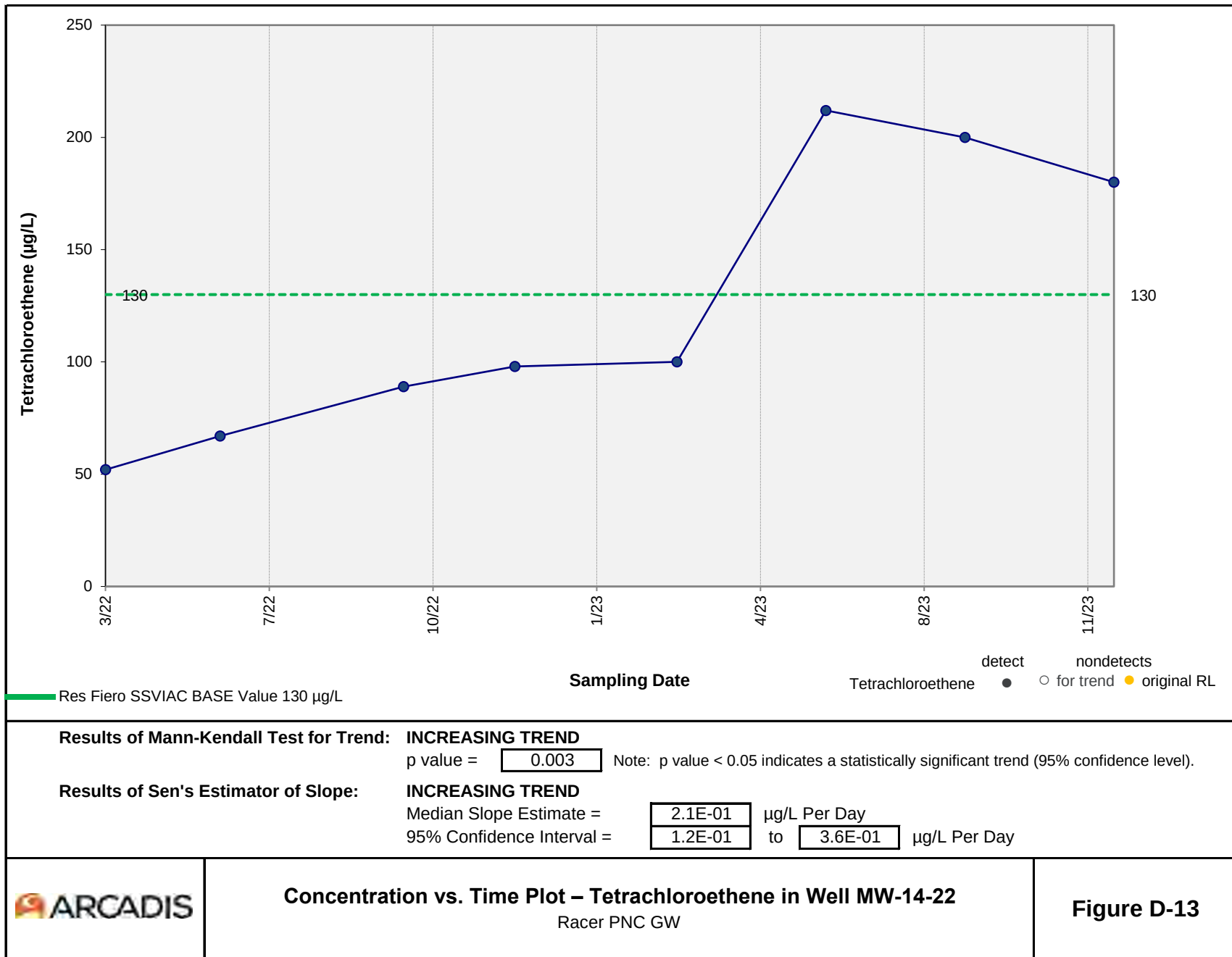


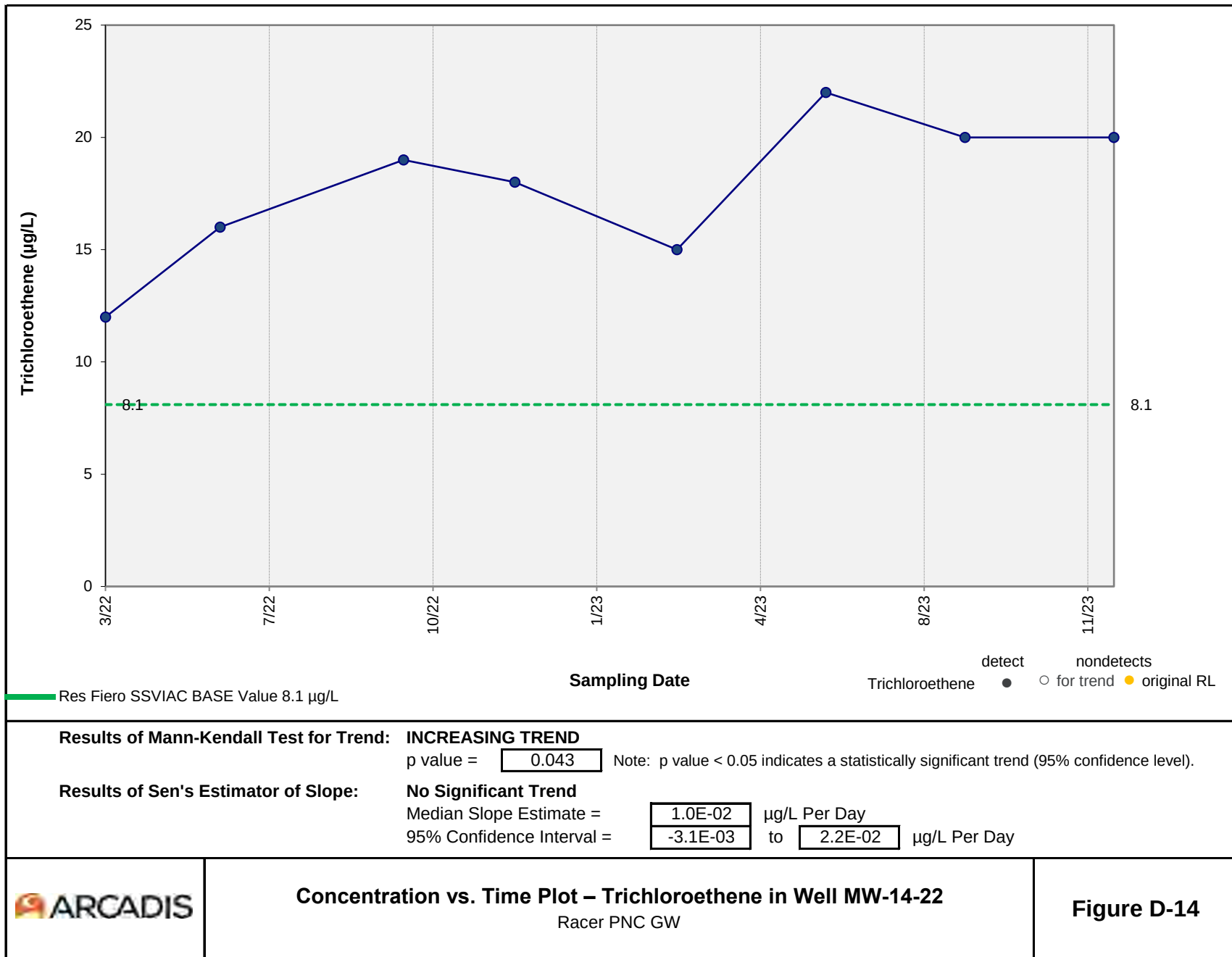


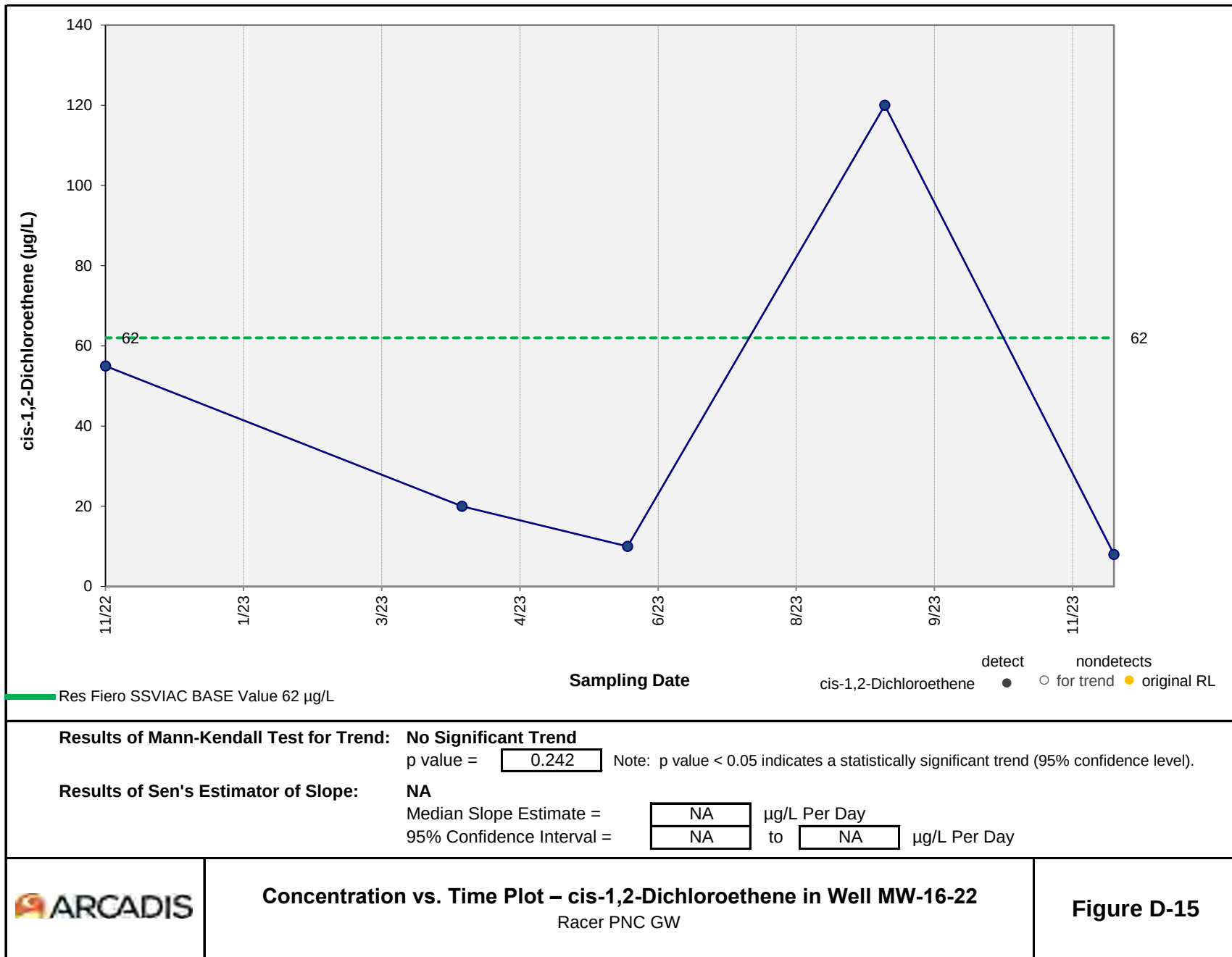


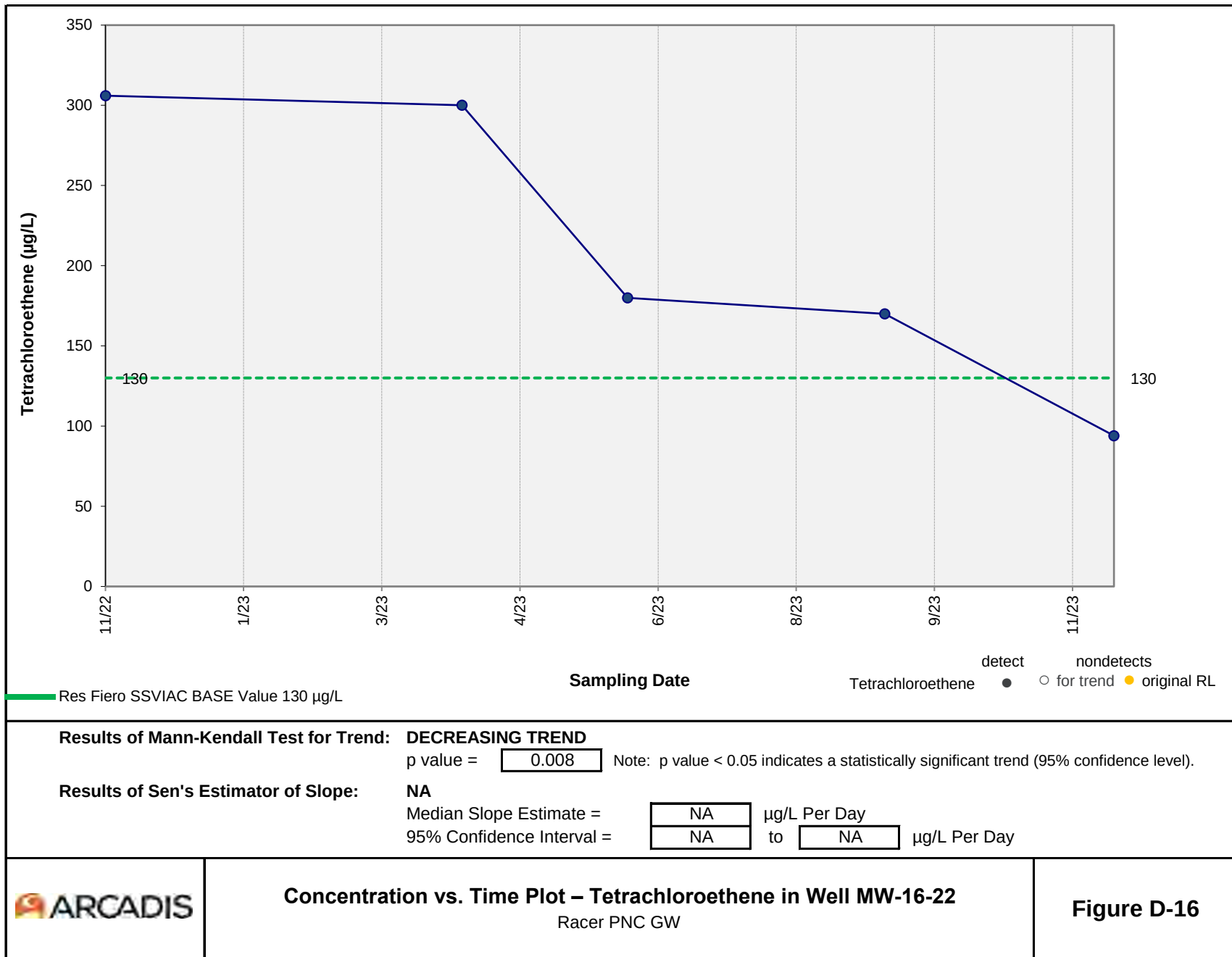


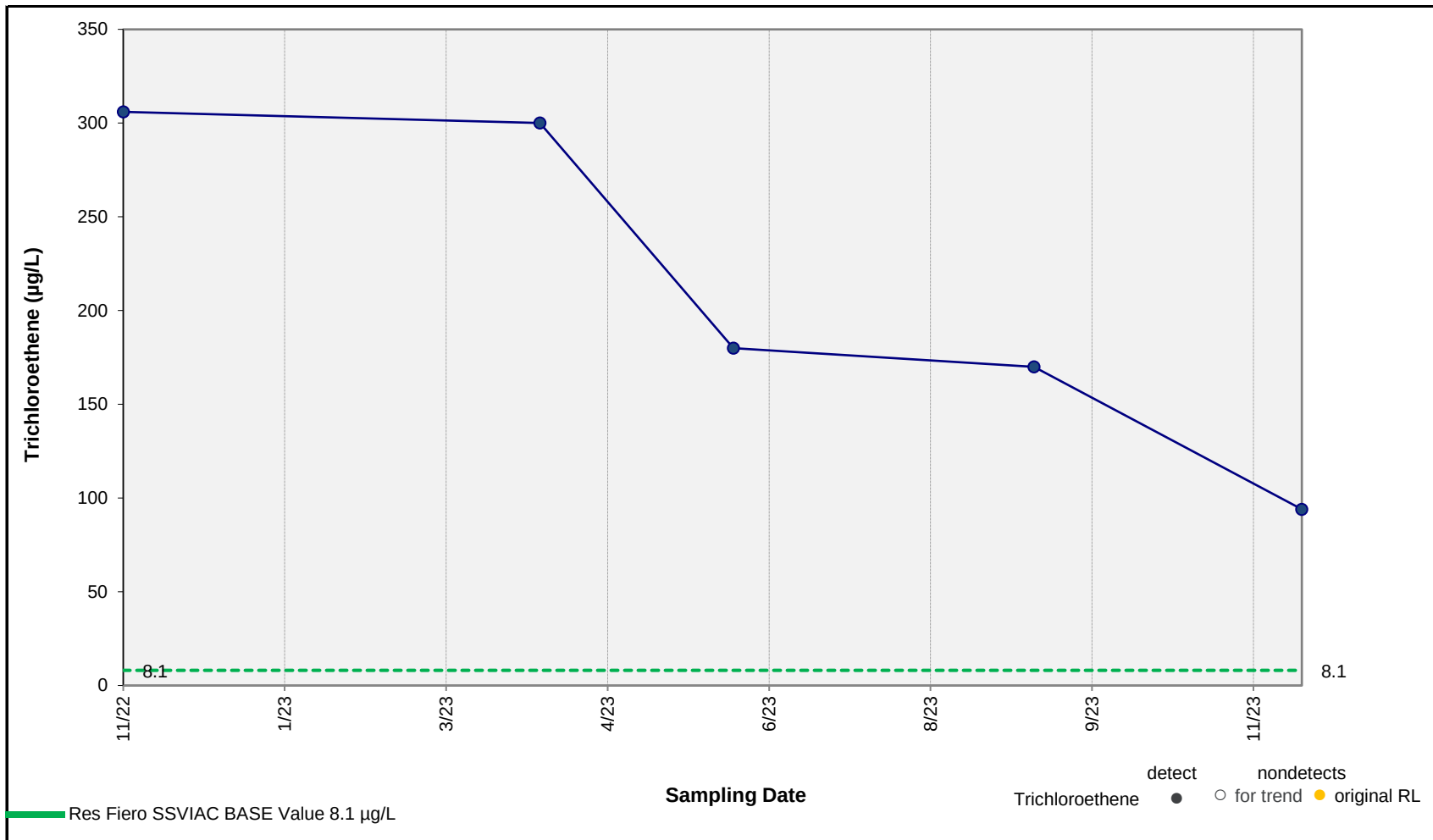












Results of Mann-Kendall Test for Trend: DECREASING TREND

p value = 0.008 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope:

NA

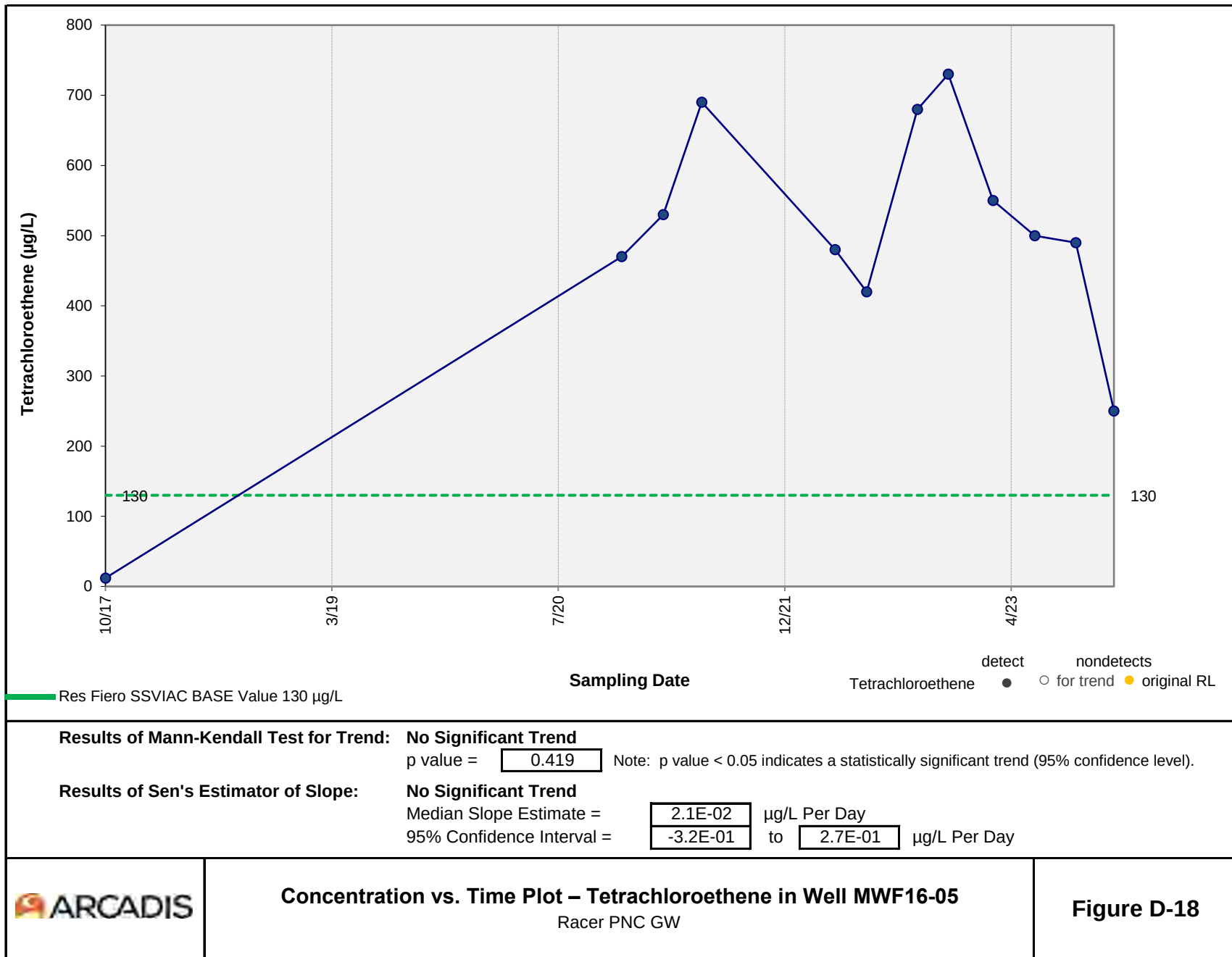
Median Slope Estimate = NA µg/L Per Day

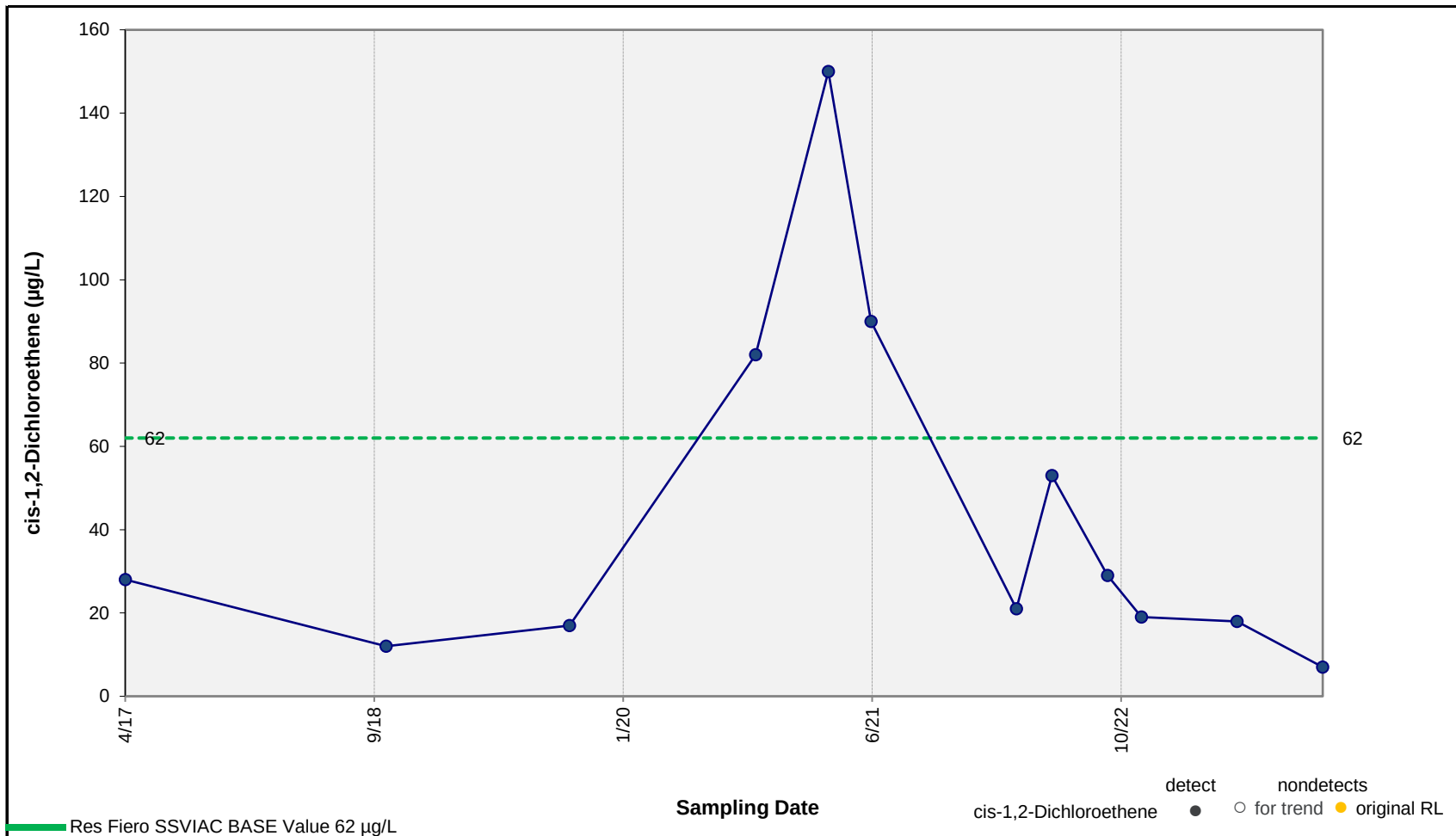
95% Confidence Interval = NA to NA µg/L Per Day



Concentration vs. Time Plot – Trichloroethene in Well MW-16-22
Racer PNC GW

Figure D-17





Results of Mann-Kendall Test for Trend: No Significant Trend

p value = 0.186 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

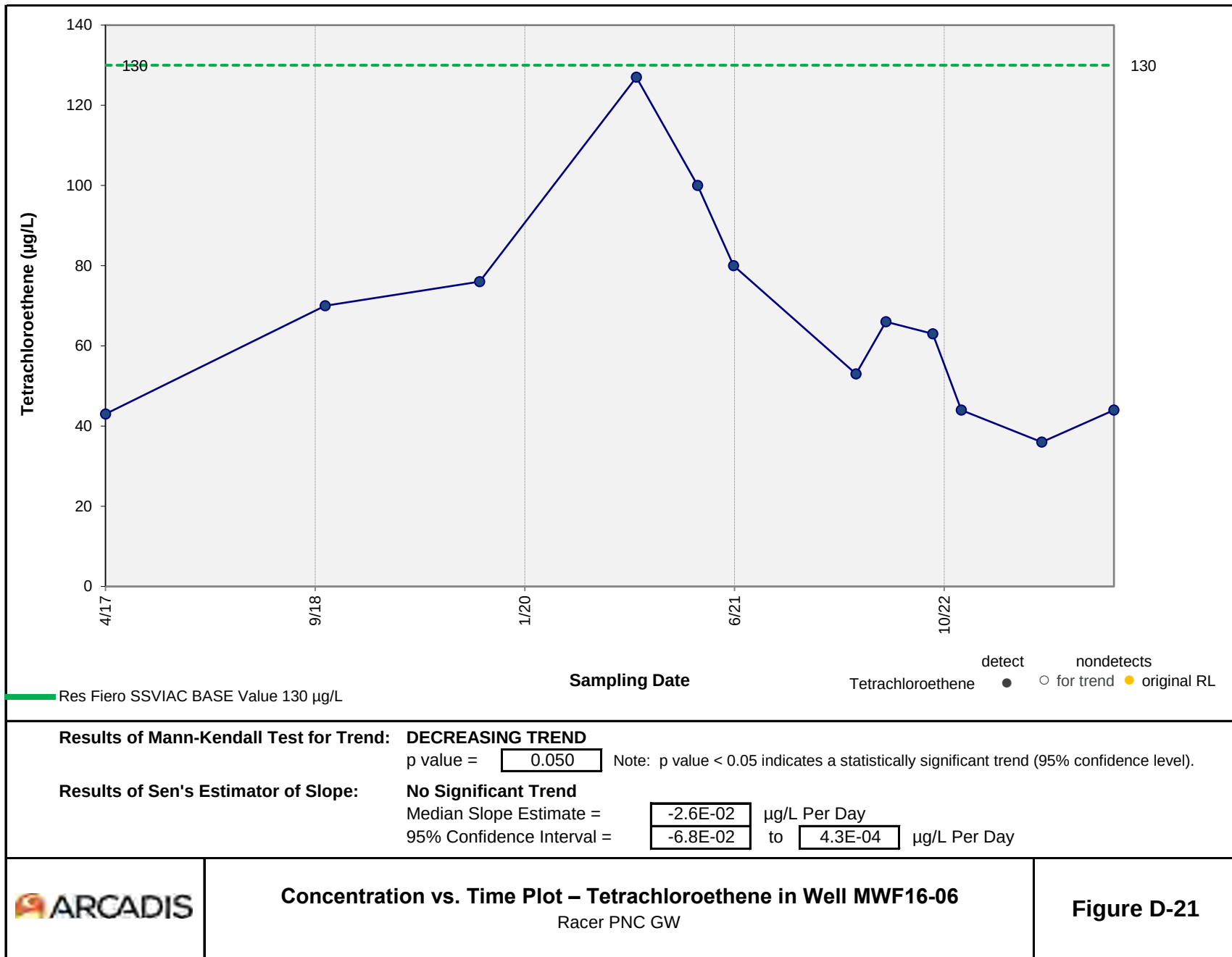
Results of Sen's Estimator of Slope: No Significant Trend

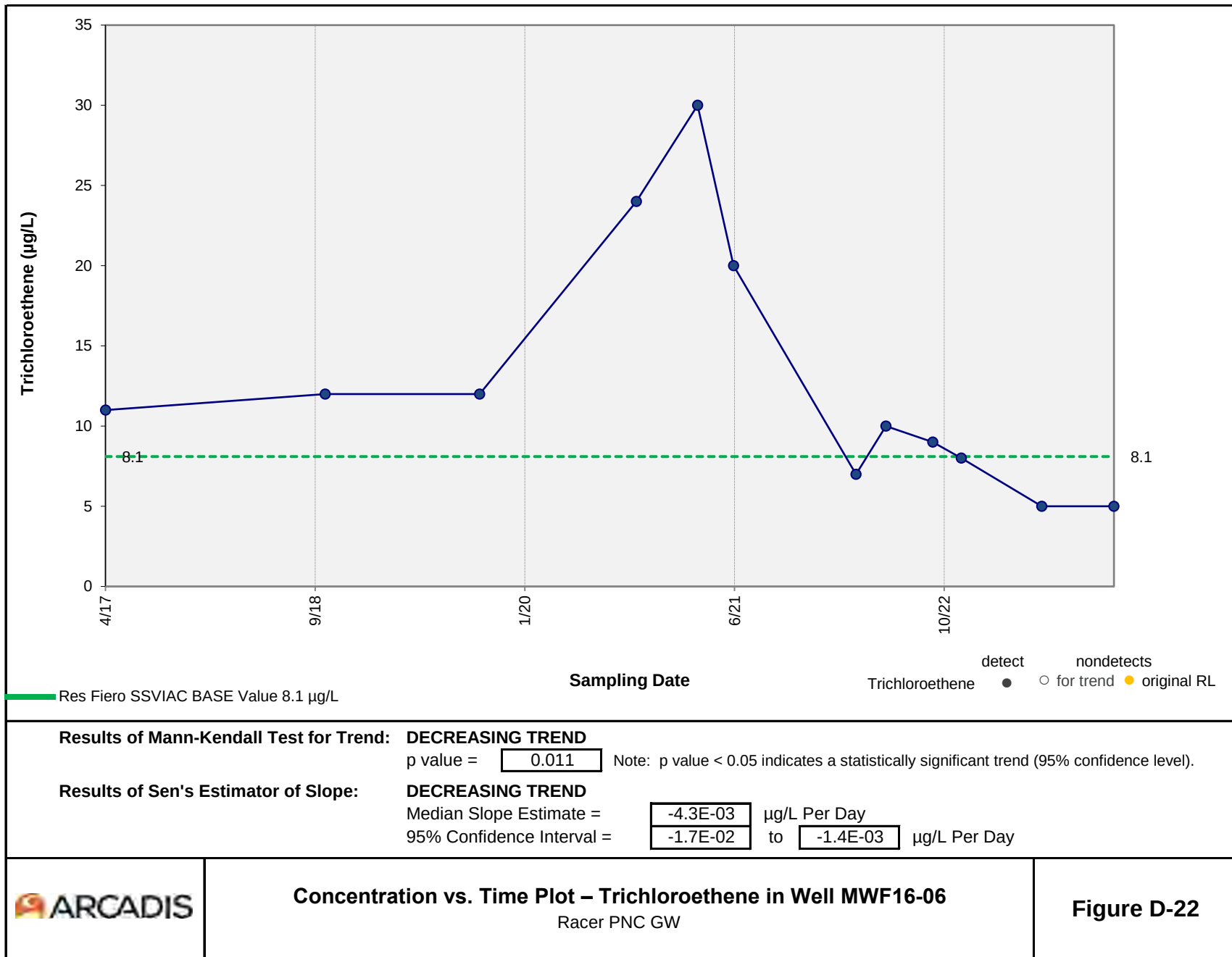
Median Slope Estimate = -7.4E-03 µg/L Per Day
 95% Confidence Interval = -8.7E-02 to 8.3E-03 µg/L Per Day

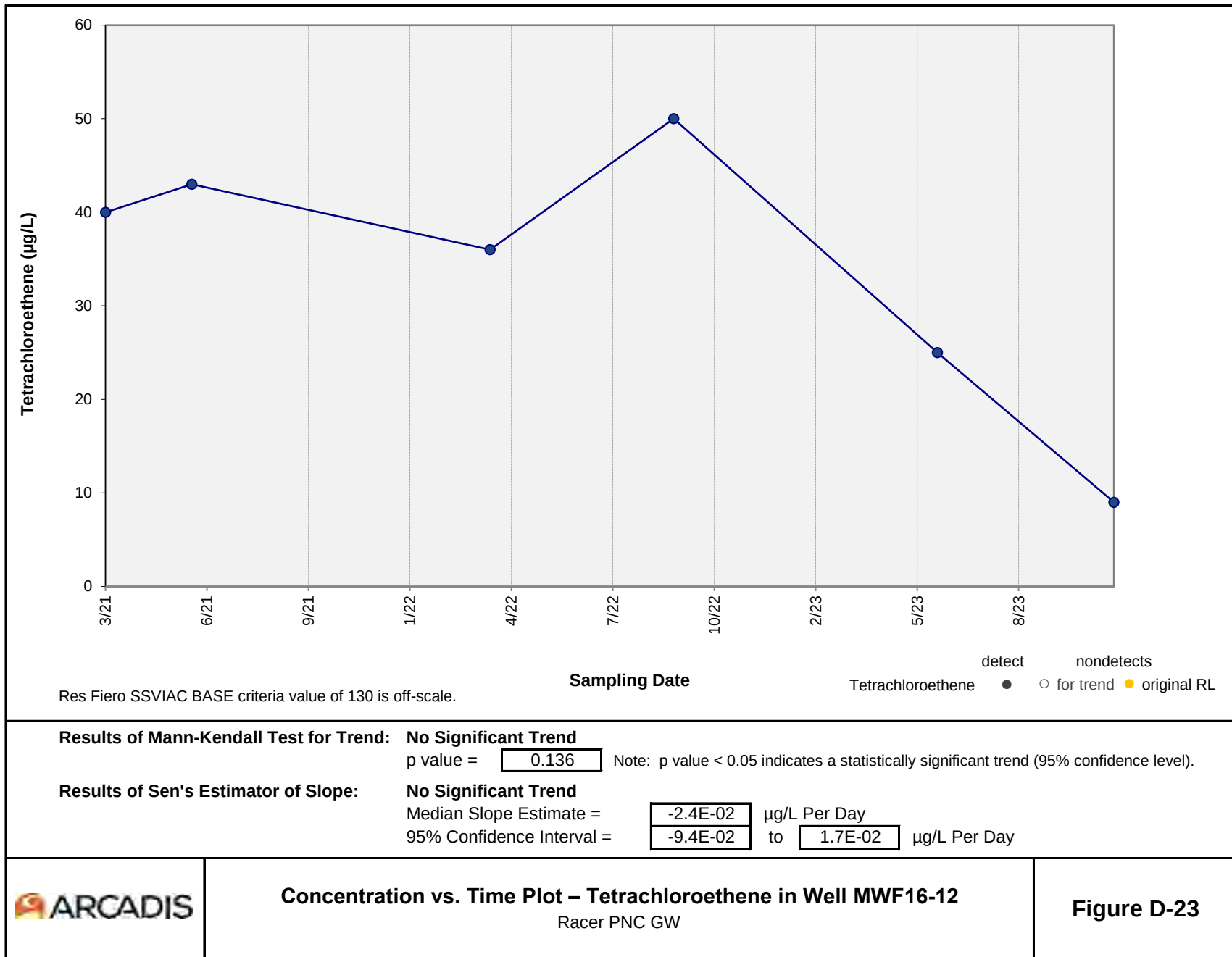


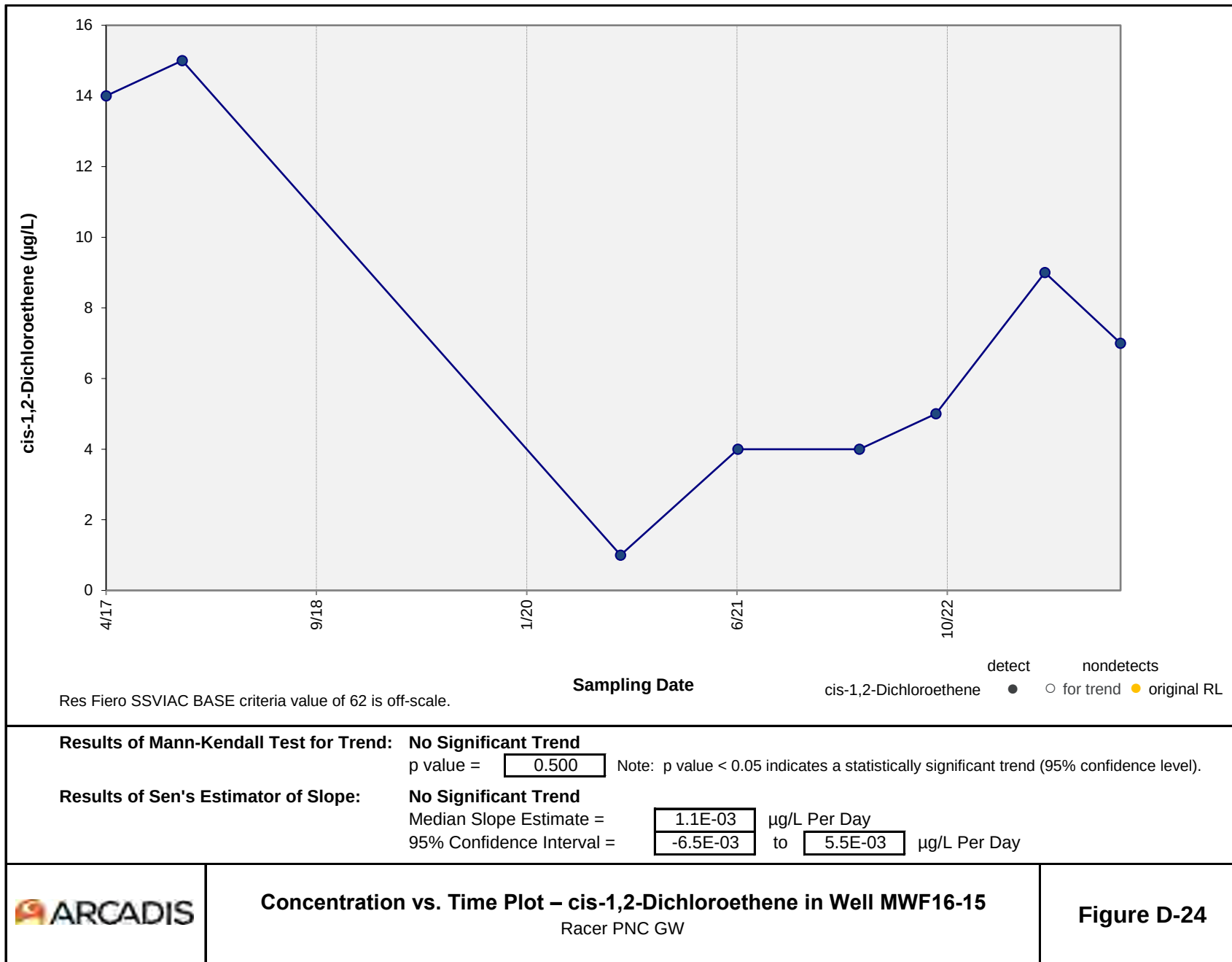
Concentration vs. Time Plot – cis-1,2-Dichloroethene in Well MWF16-06
 Racer PNC GW

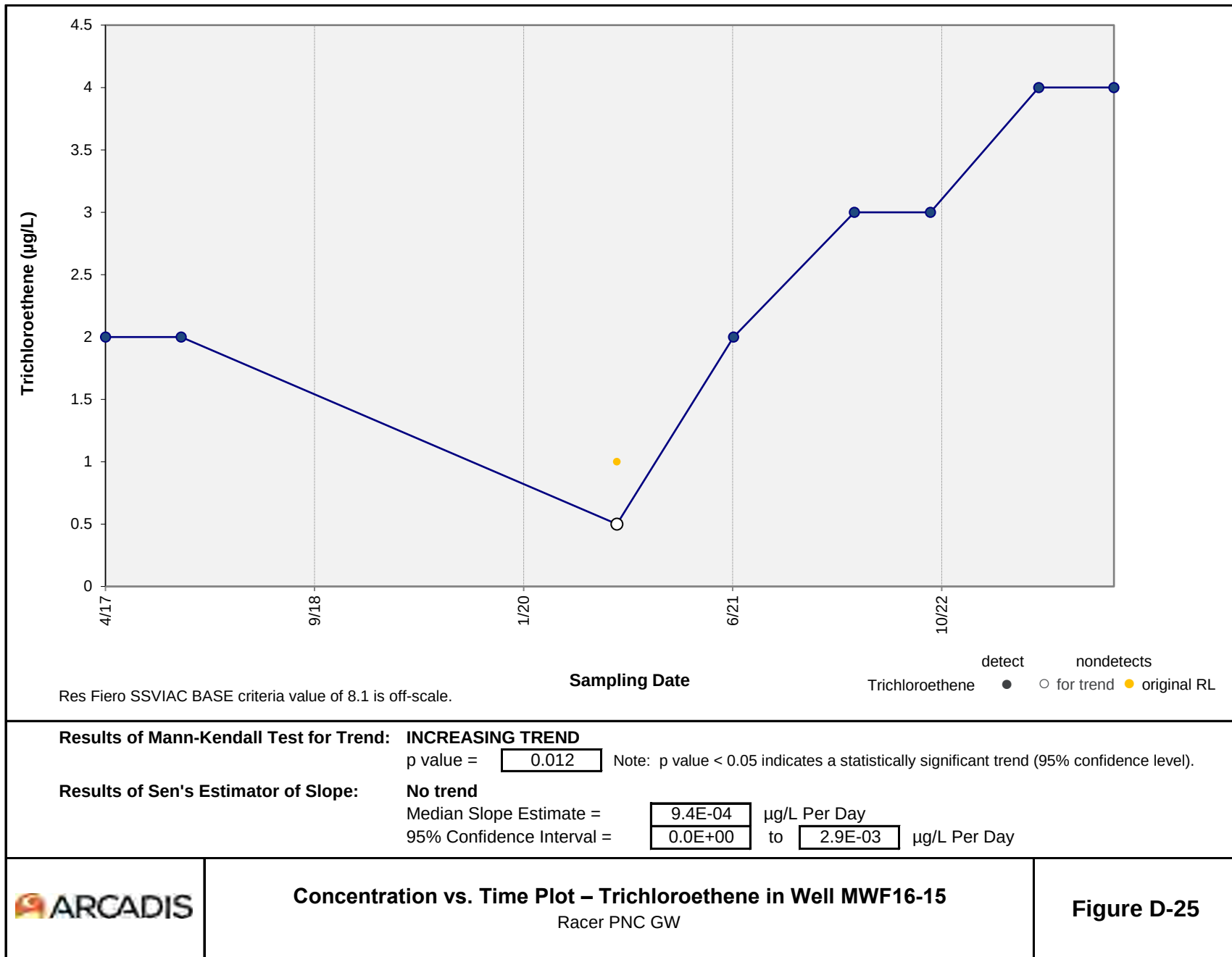
Figure D-20

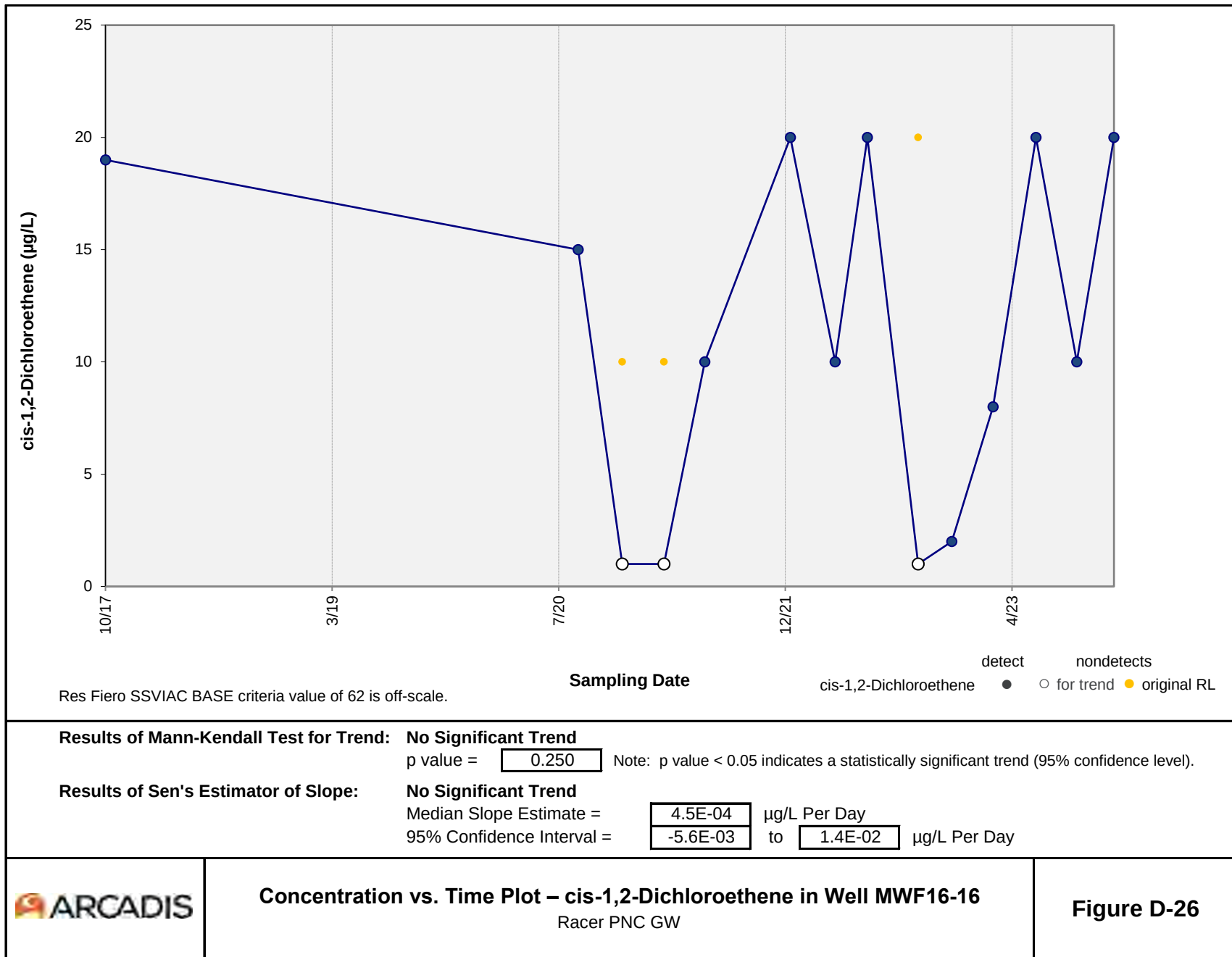


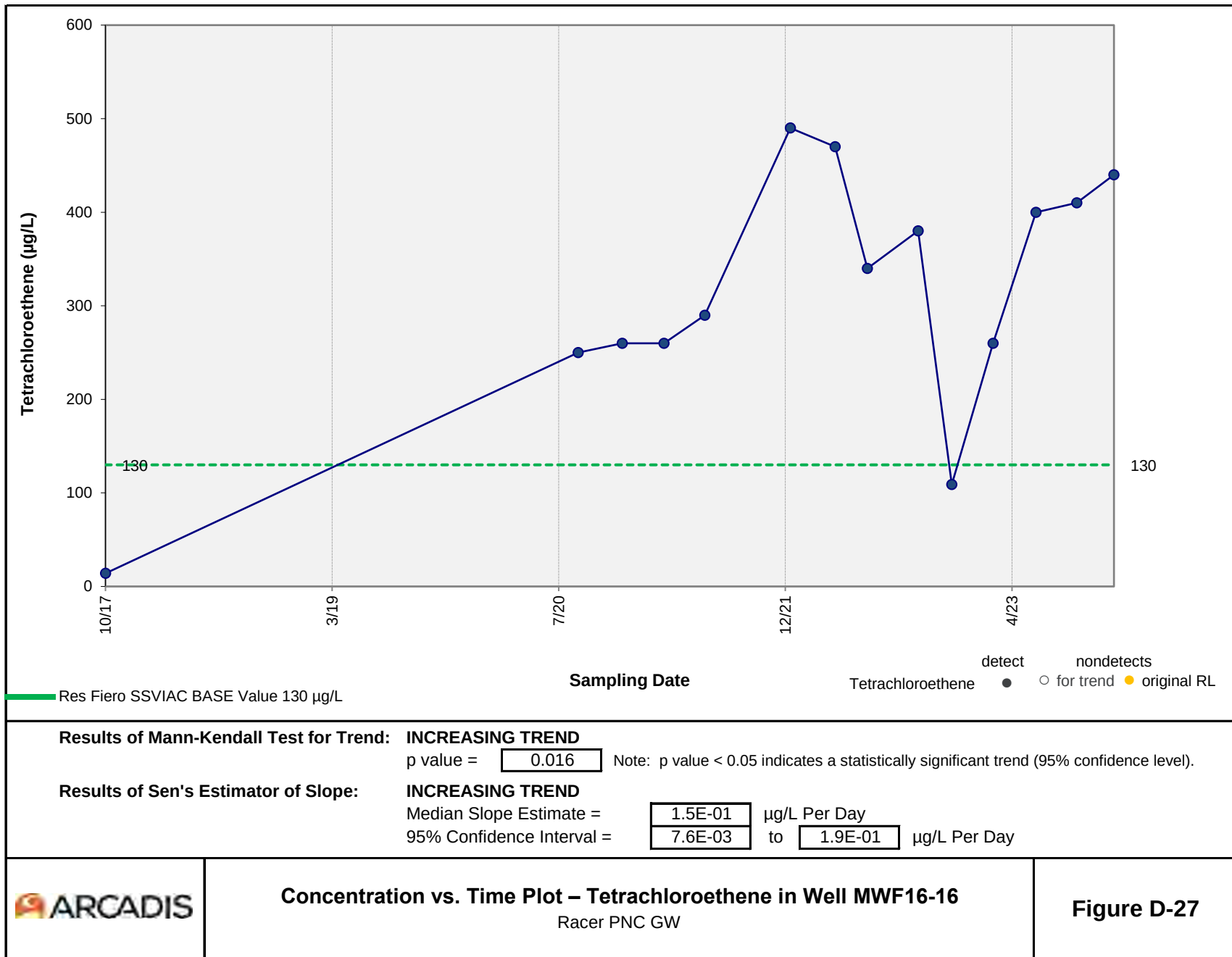


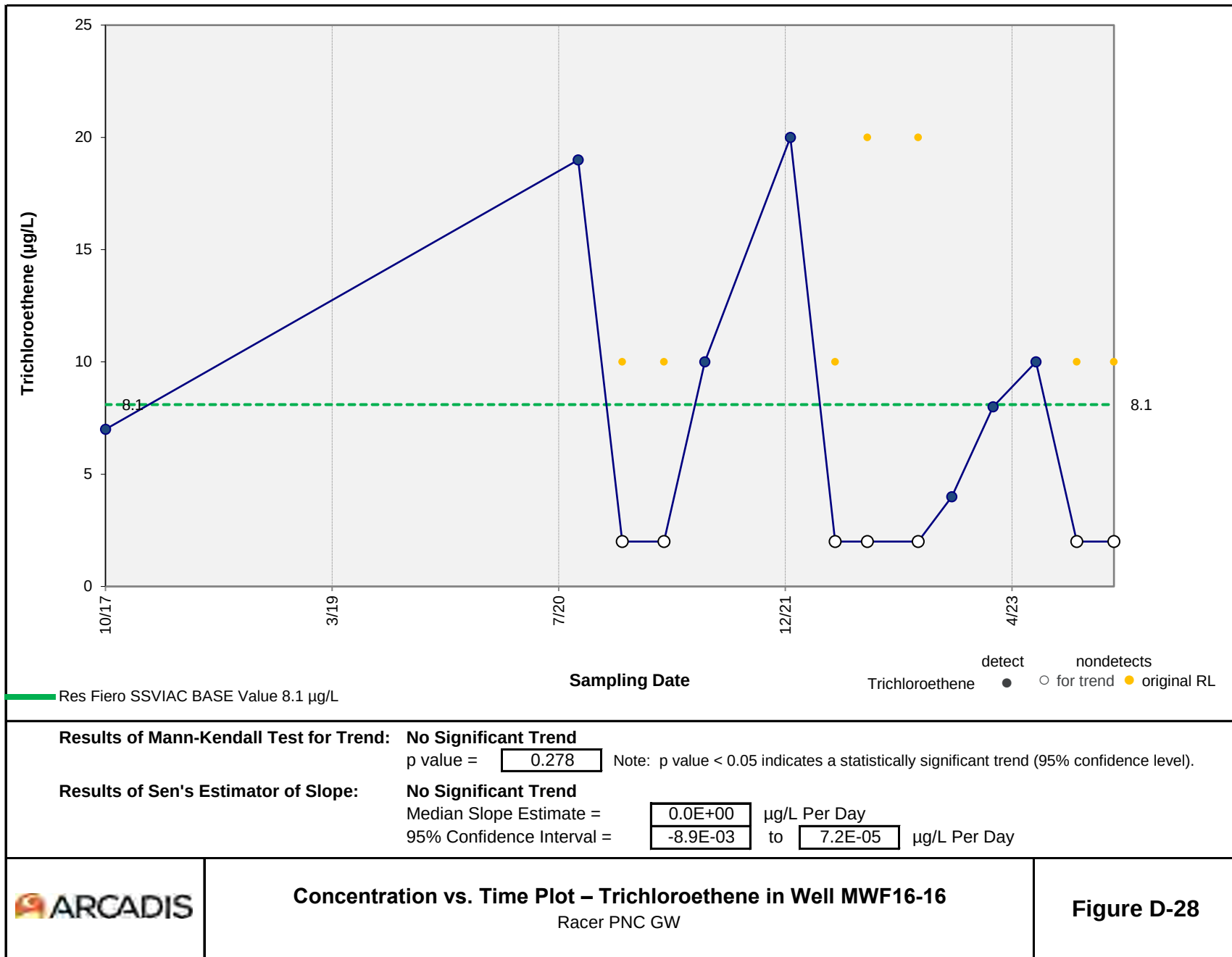


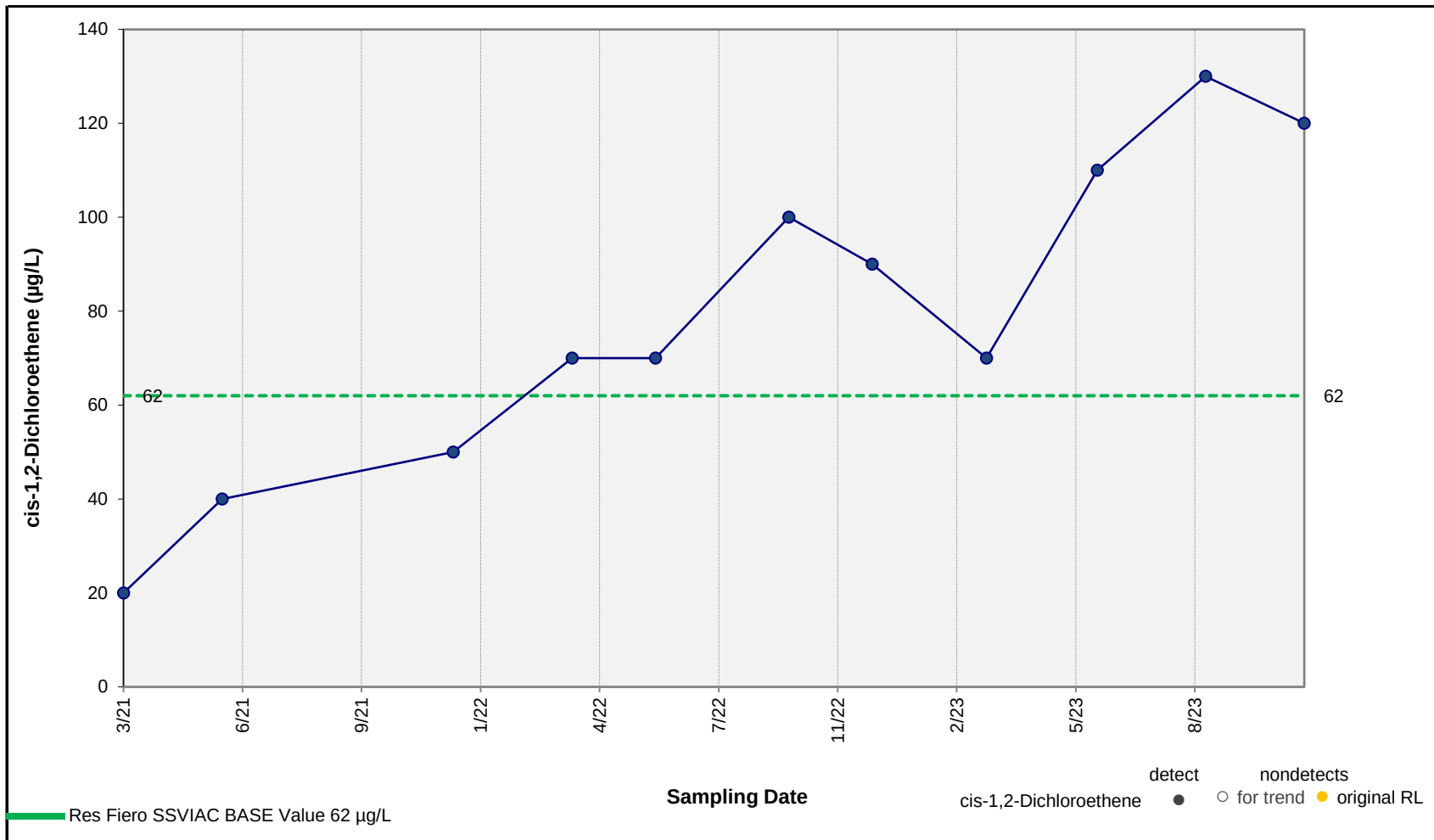












Results of Mann-Kendall Test for Trend: INCREASING TREND

p value = **<0.001** Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope:

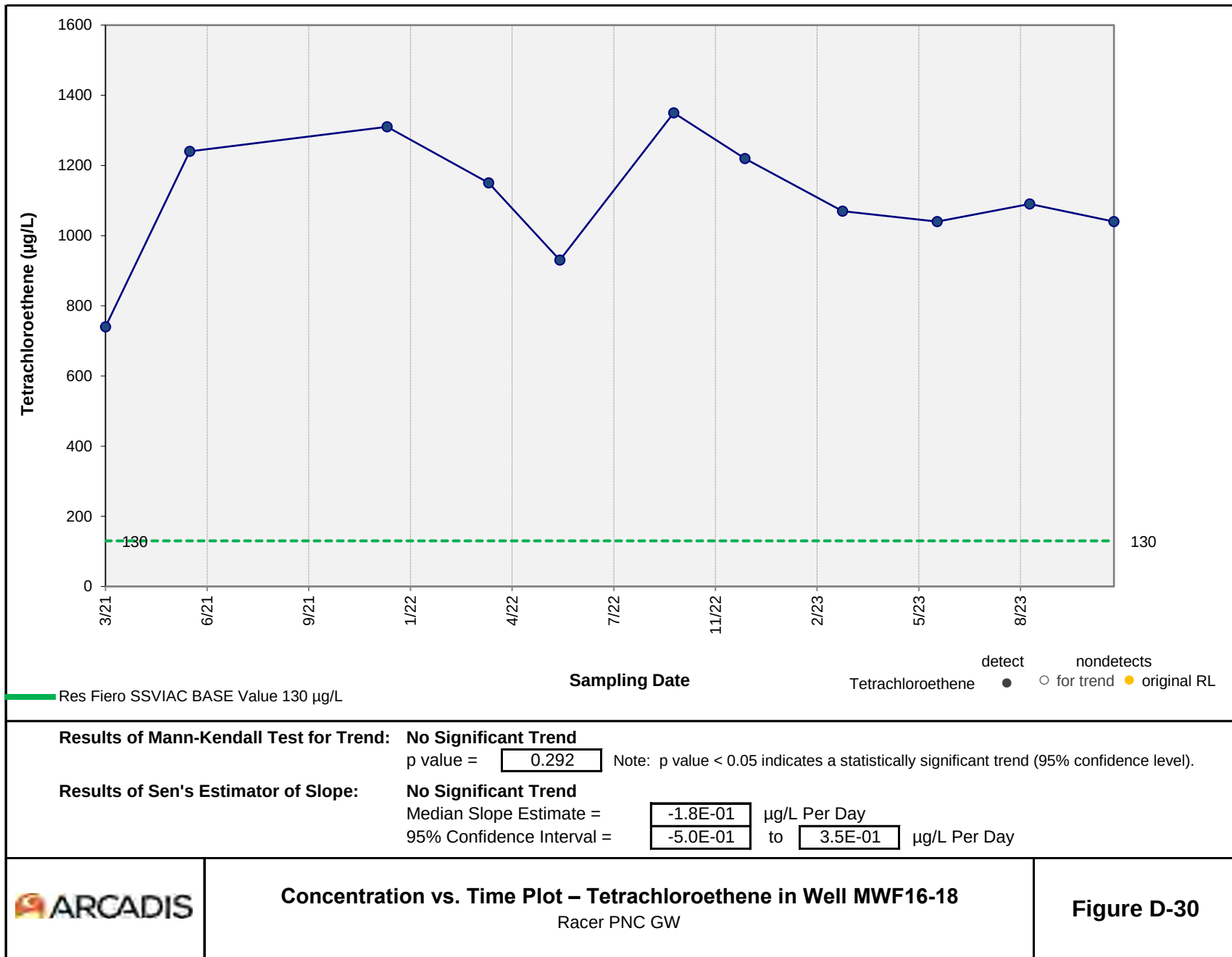
INCREASING TREND

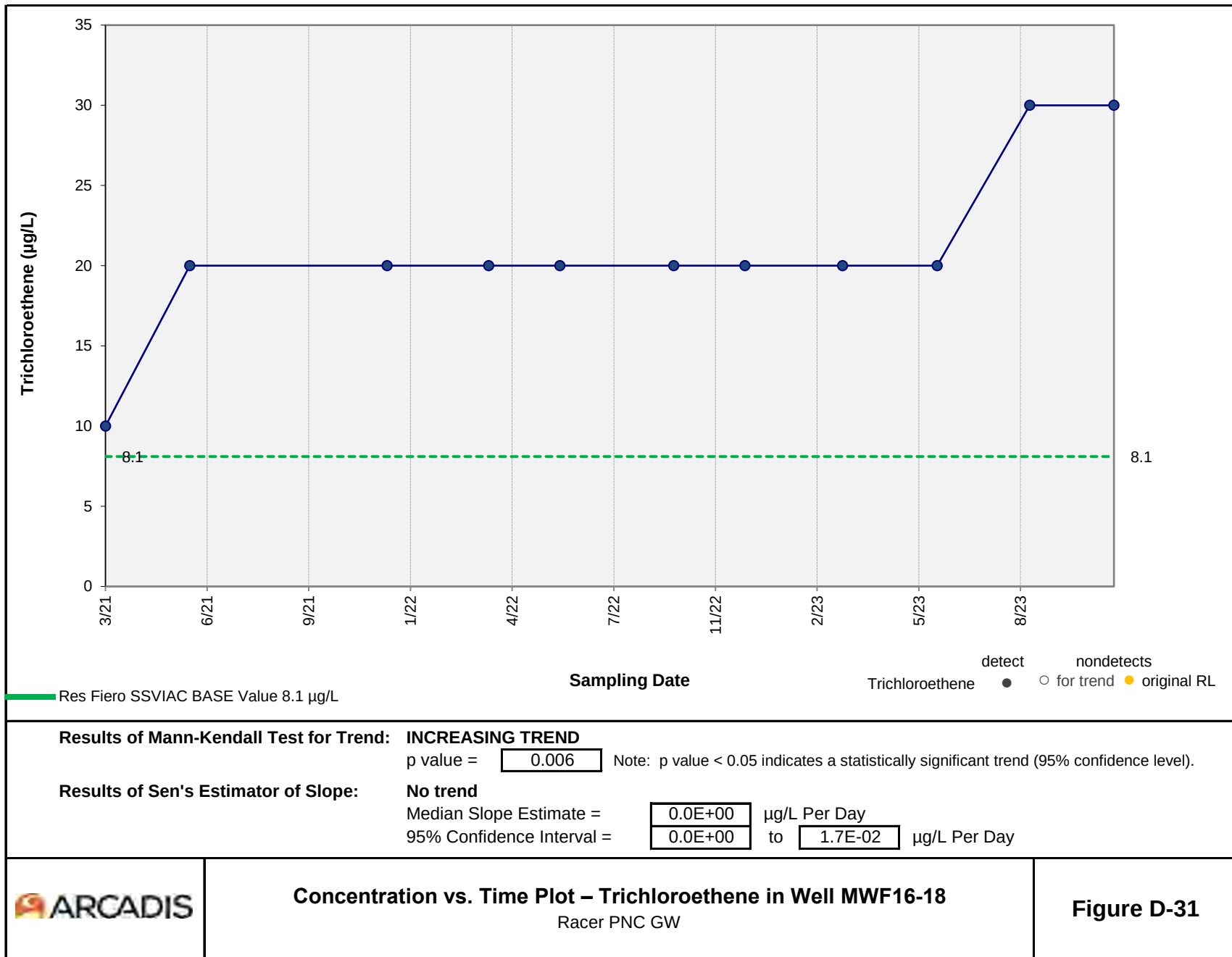
Median Slope Estimate = **1.1E-01** µg/L Per Day
 95% Confidence Interval = **7.9E-02** to **1.2E-01** µg/L Per Day

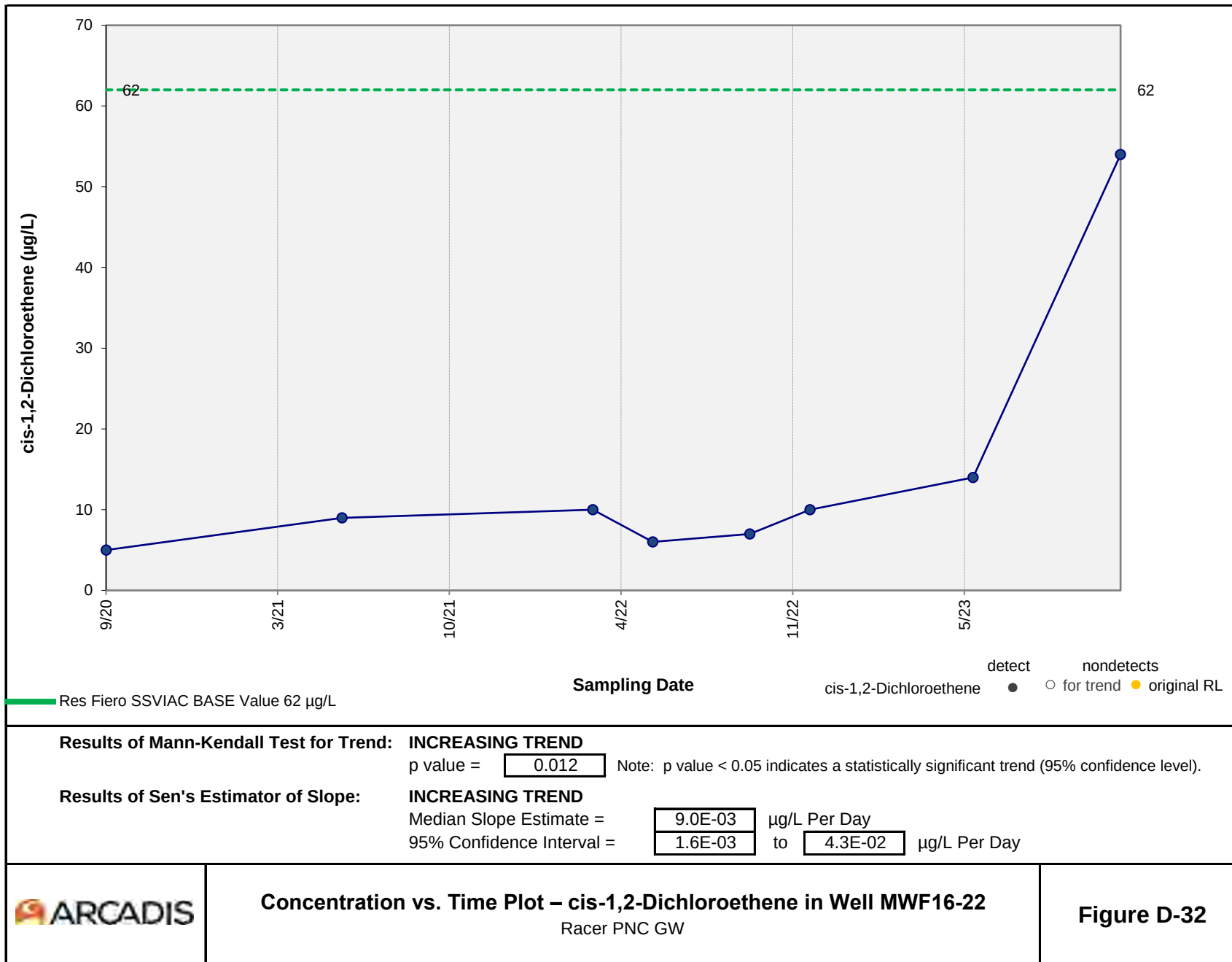


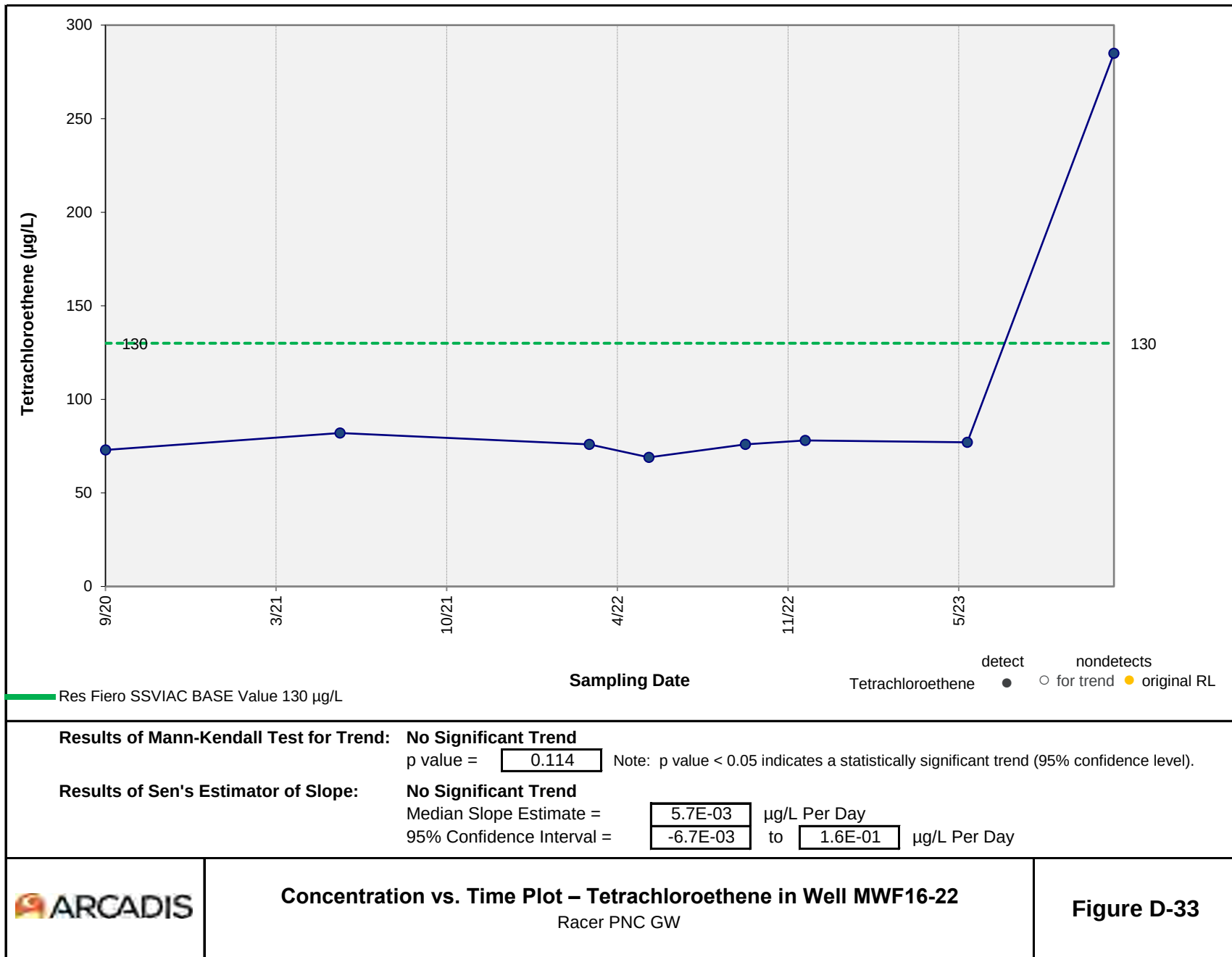
Concentration vs. Time Plot – cis-1,2-Dichloroethene in Well MWF16-18
 Racer PNC GW

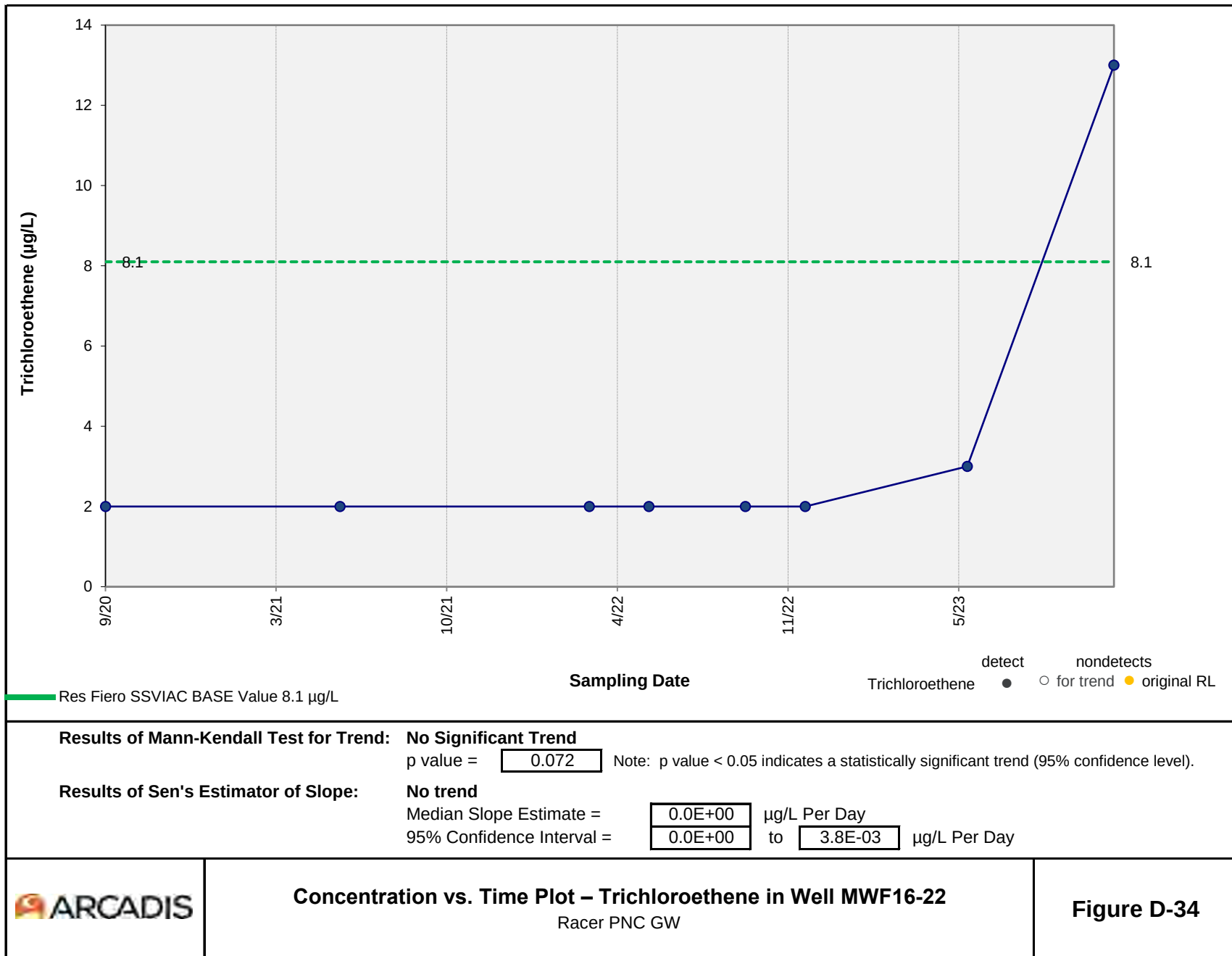
Figure D-29

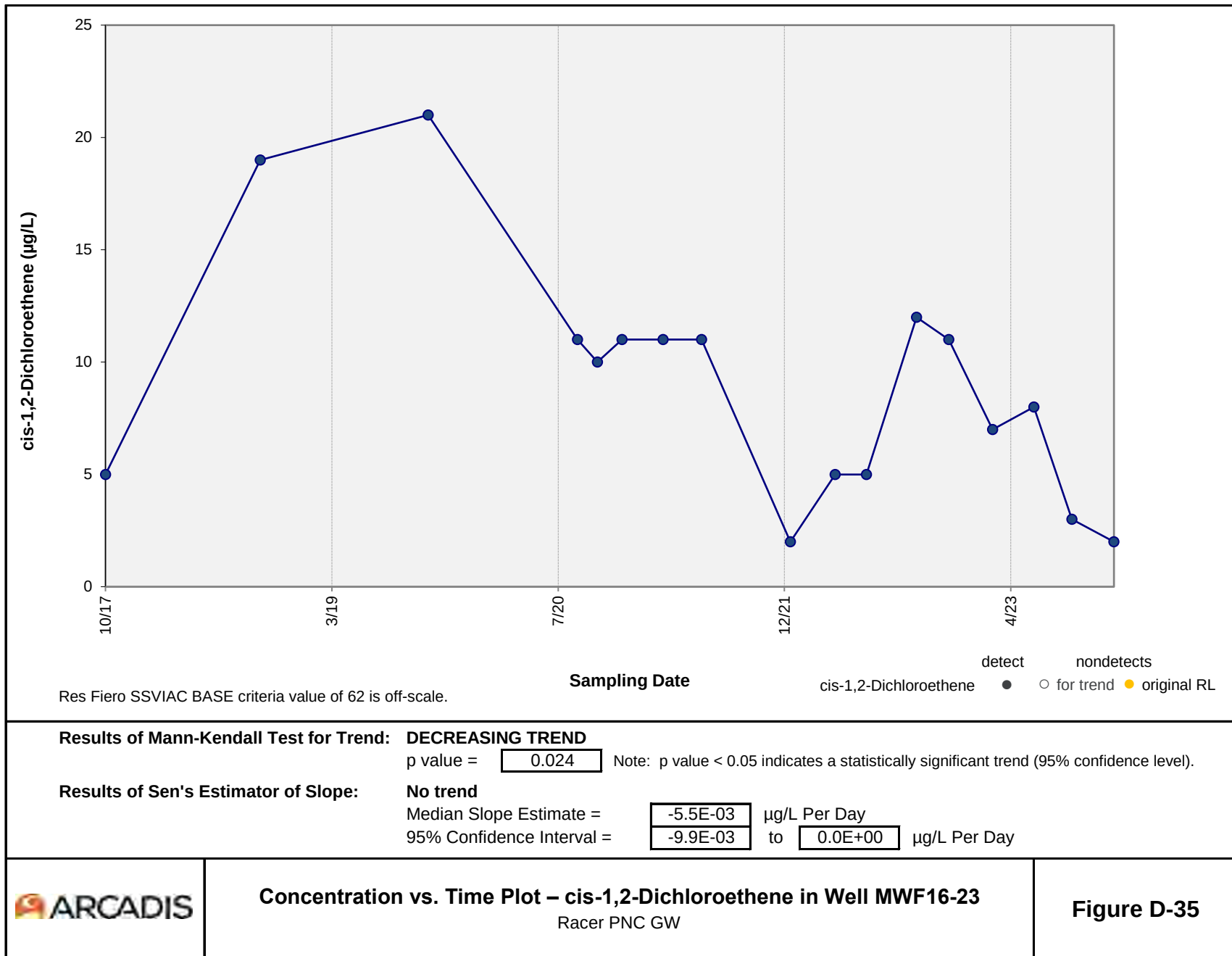


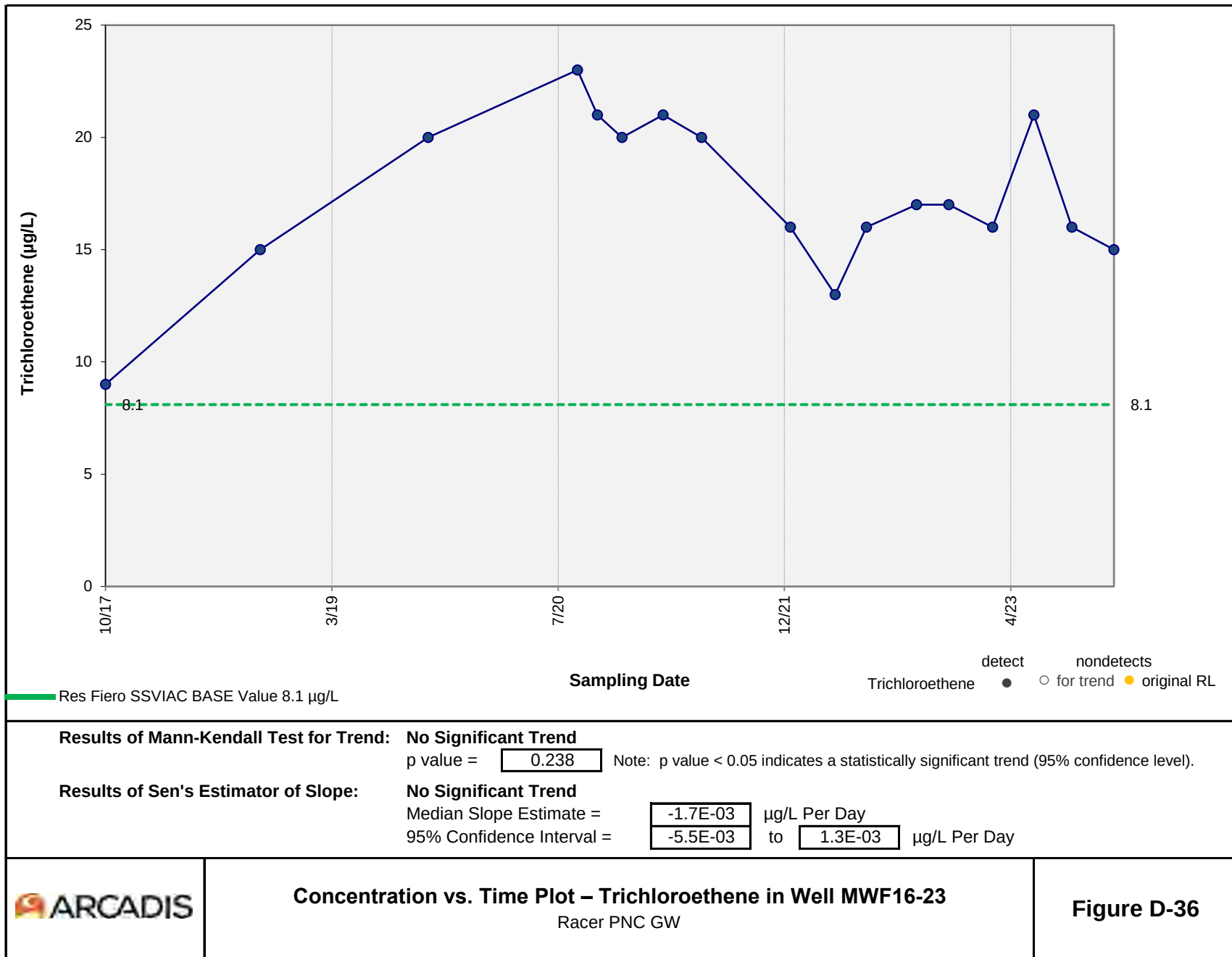


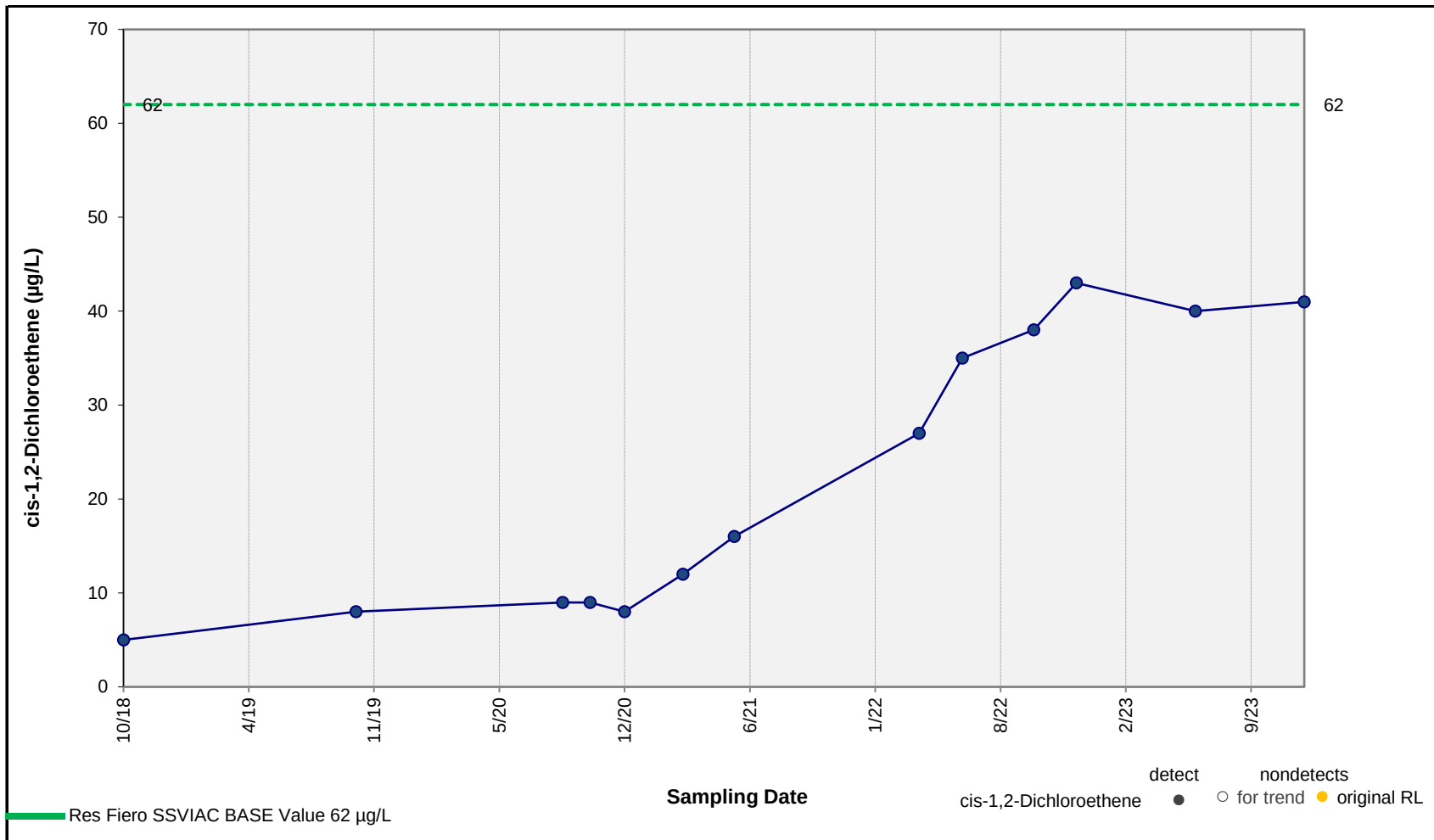












Results of Mann-Kendall Test for Trend: INCREASING TREND

p value = **<0.001** Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope:

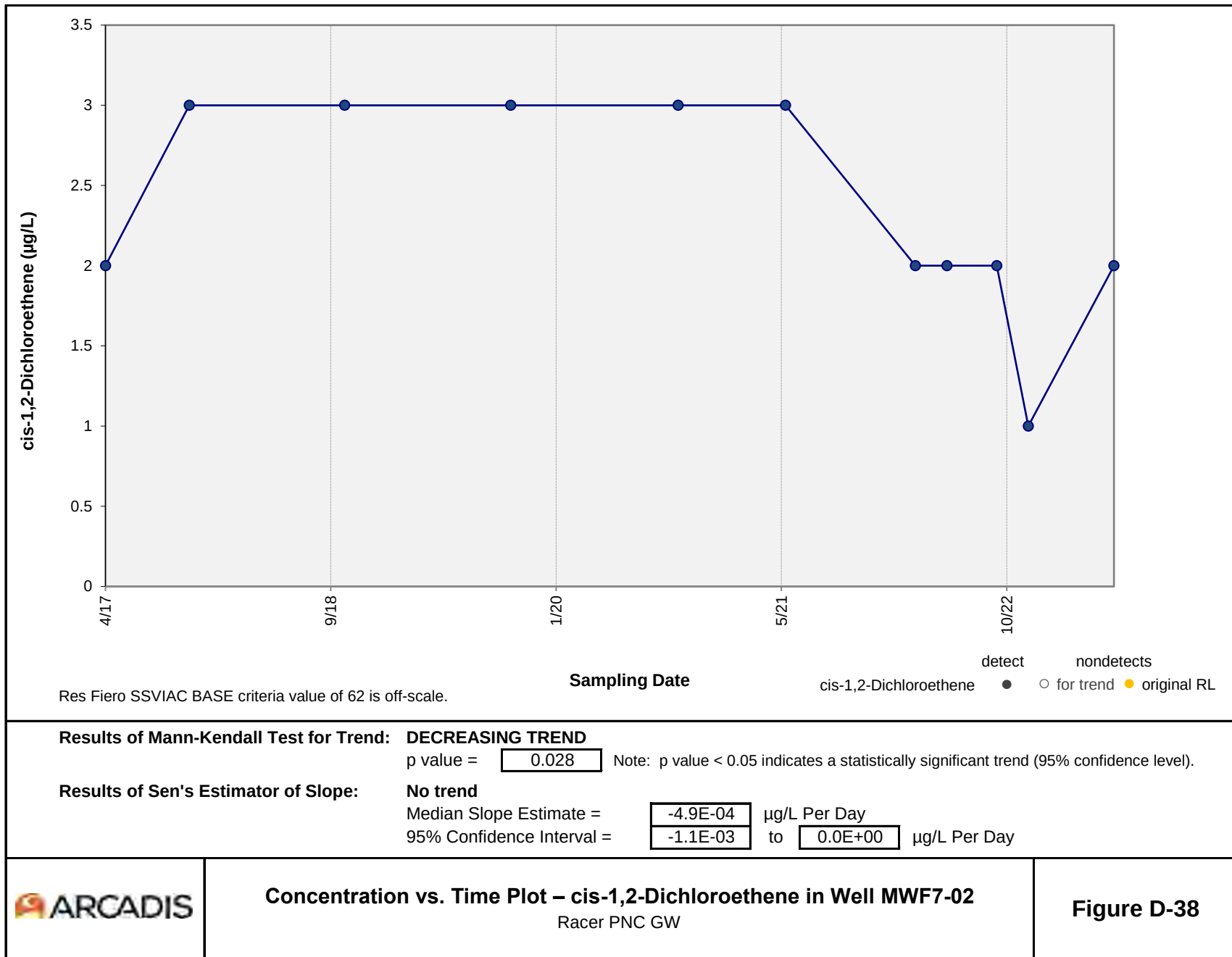
INCREASING TREND

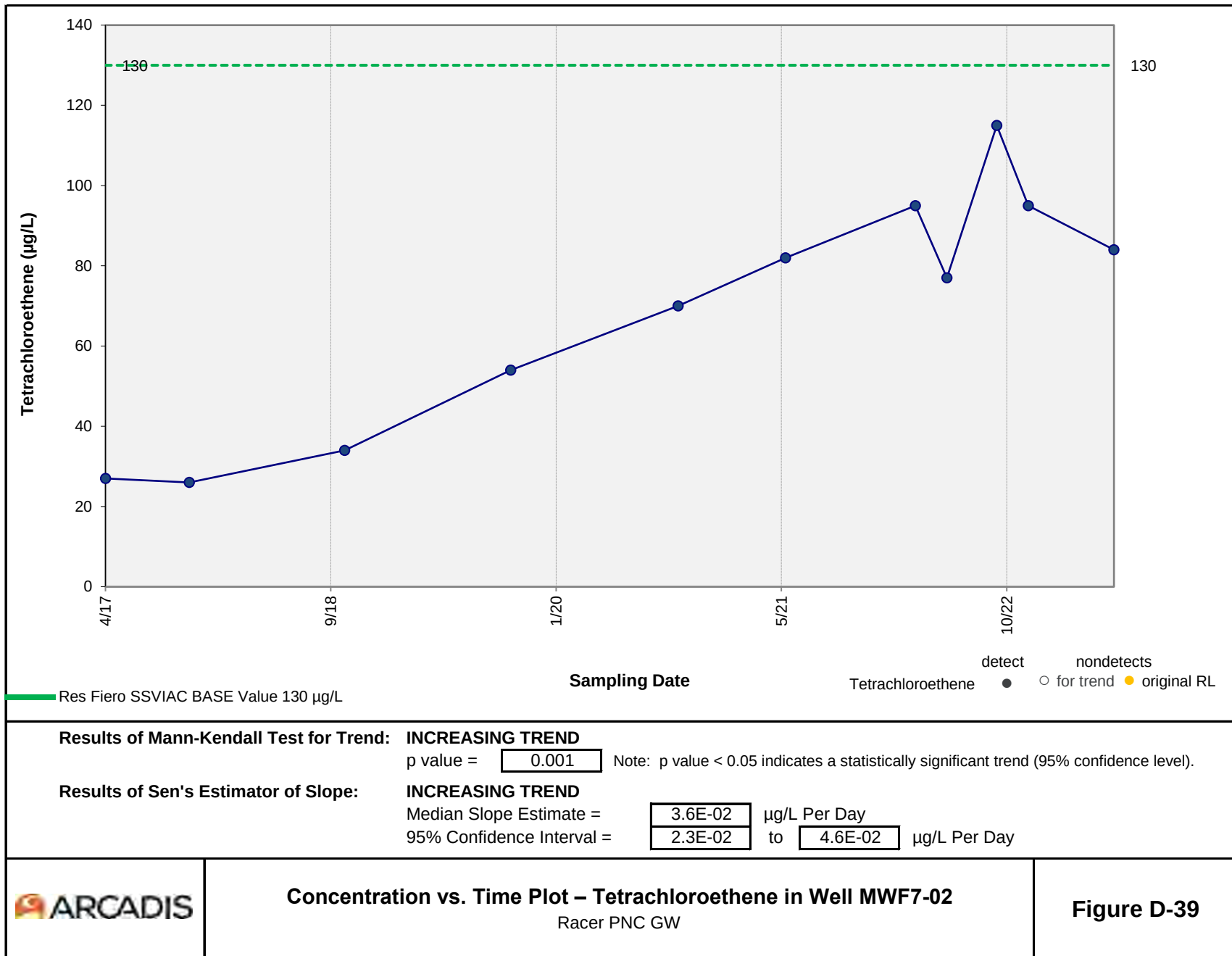
Median Slope Estimate = **2.8E-02** µg/L Per Day
 95% Confidence Interval = **1.7E-02** to **4.0E-02** µg/L Per Day

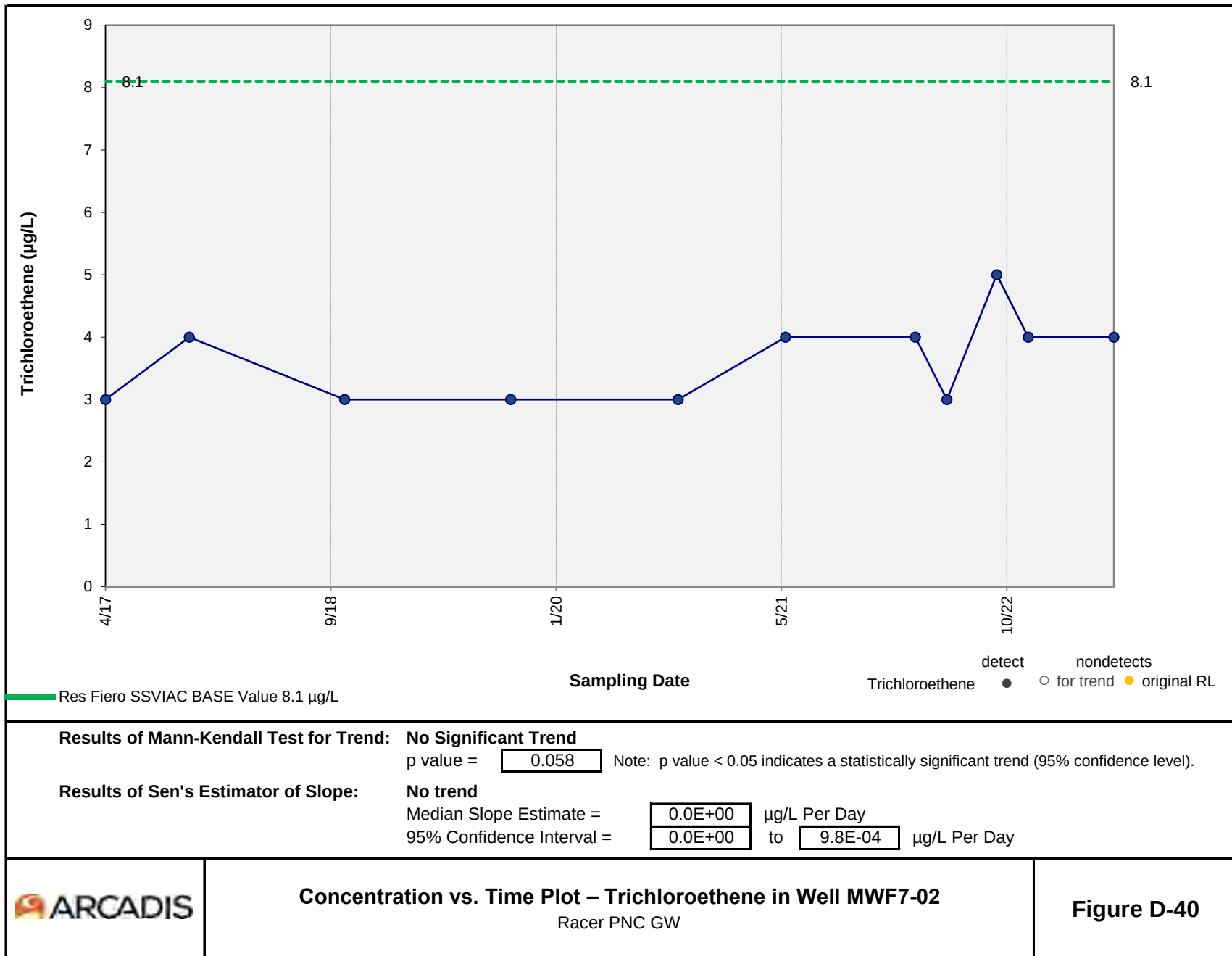


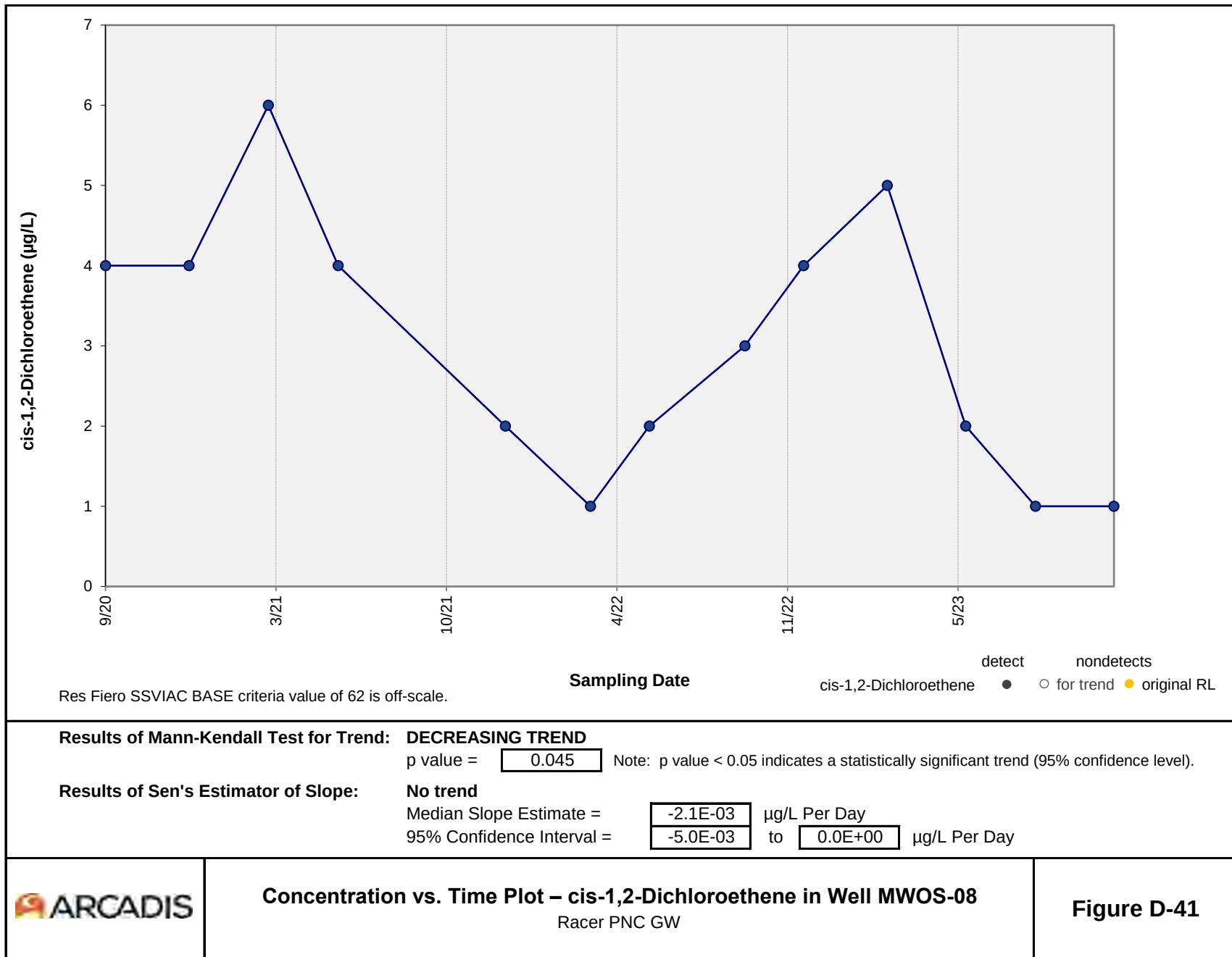
Concentration vs. Time Plot – cis-1,2-Dichloroethene in Well MWF16-25
 Racer PNC GW

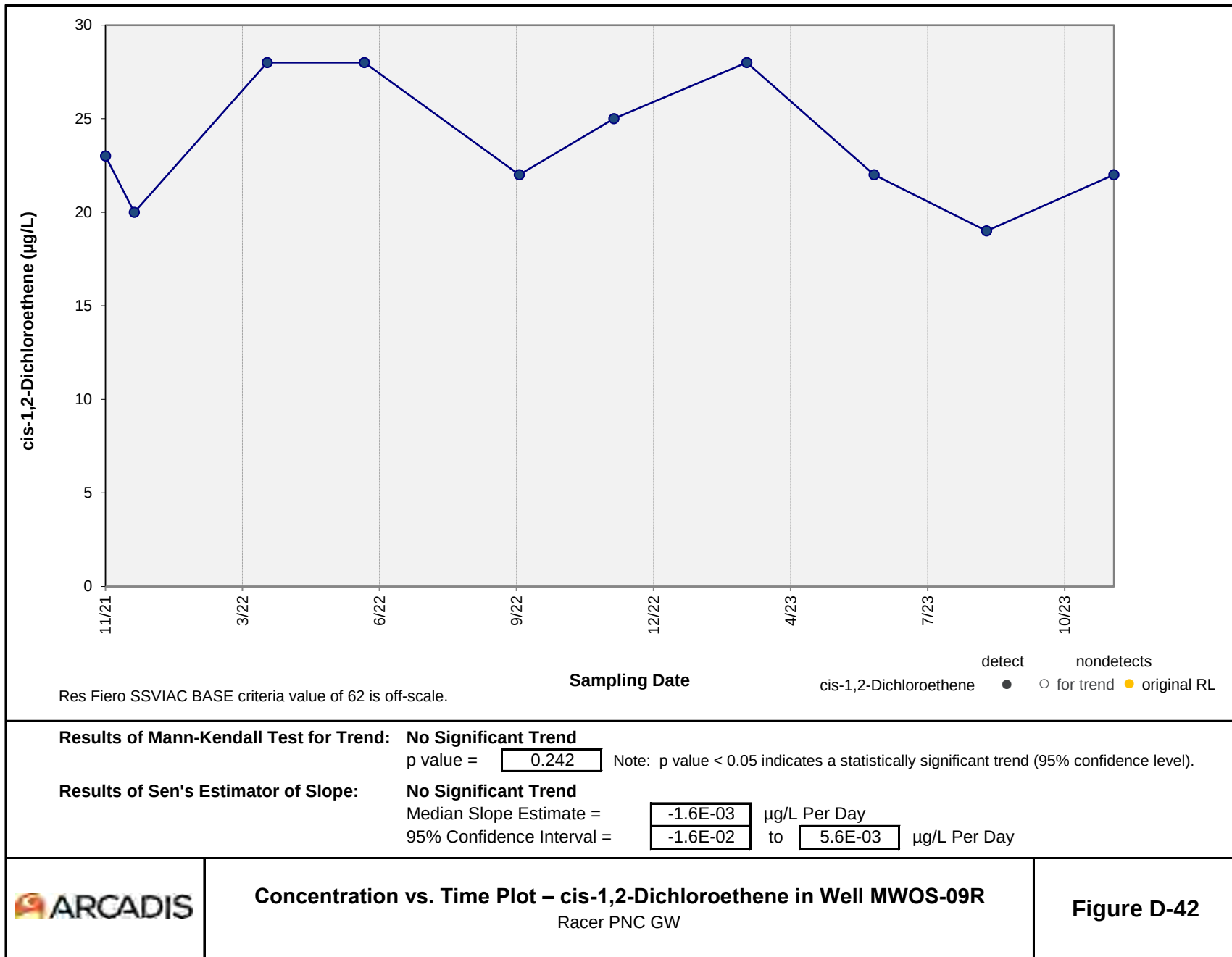
Figure D-37

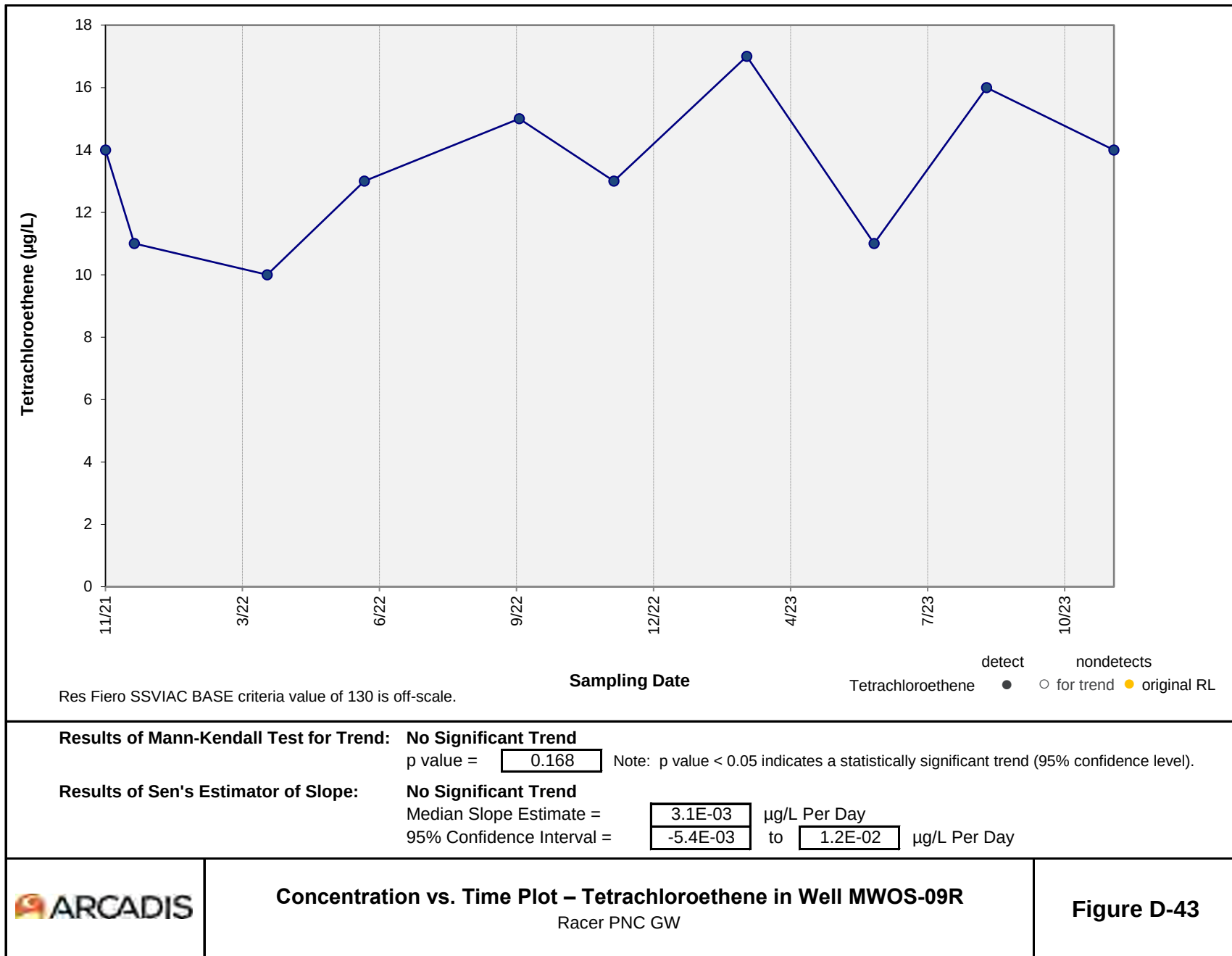


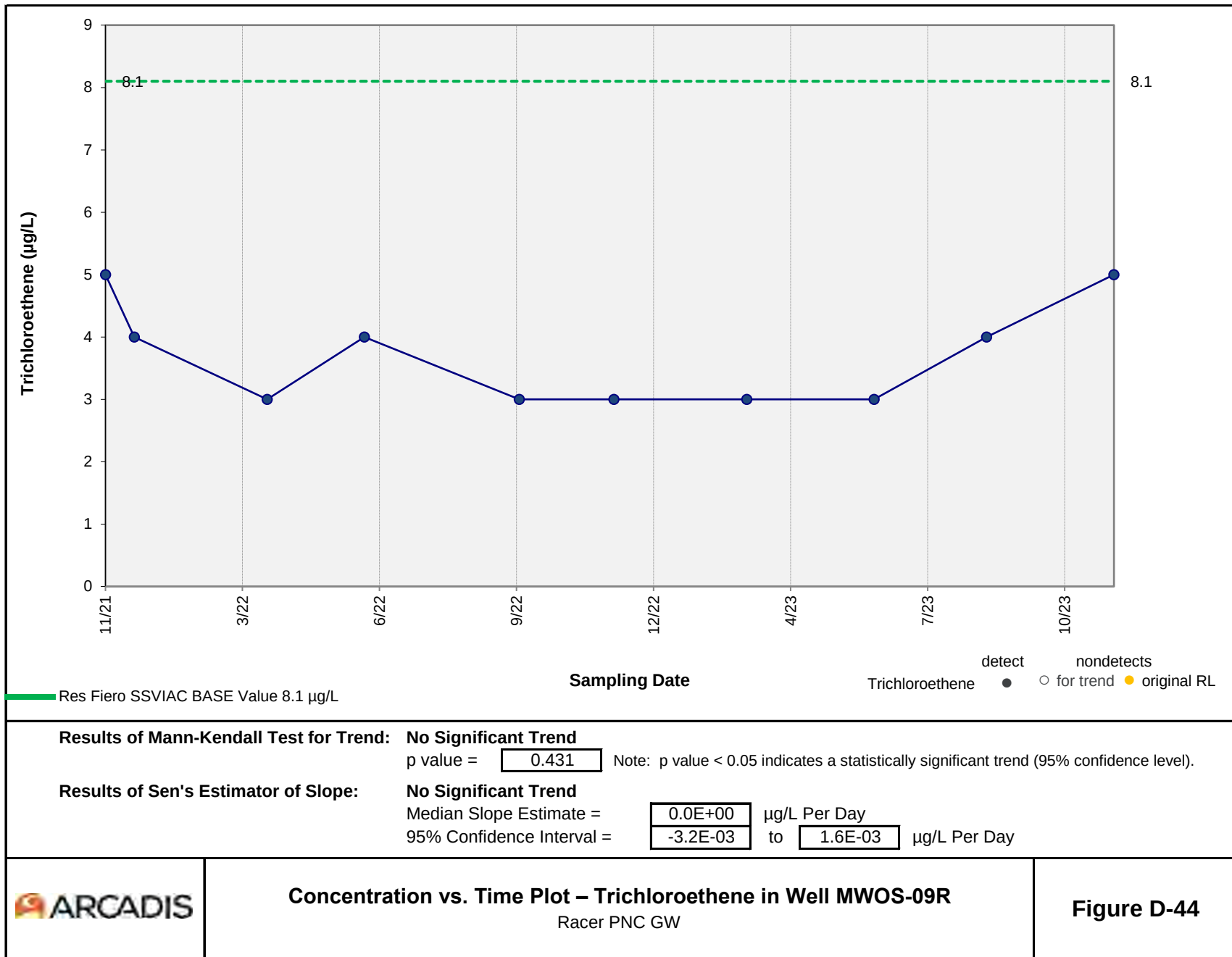


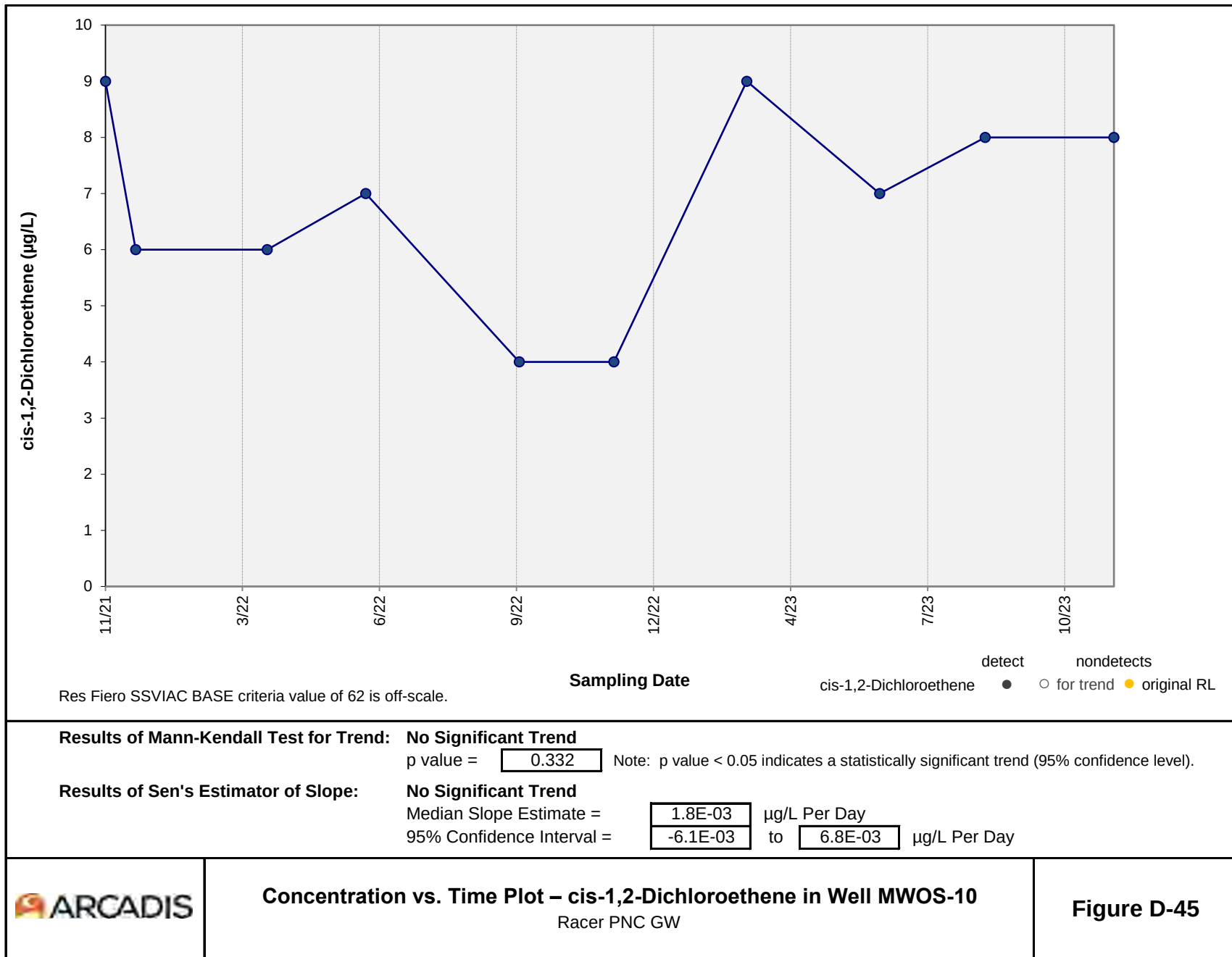


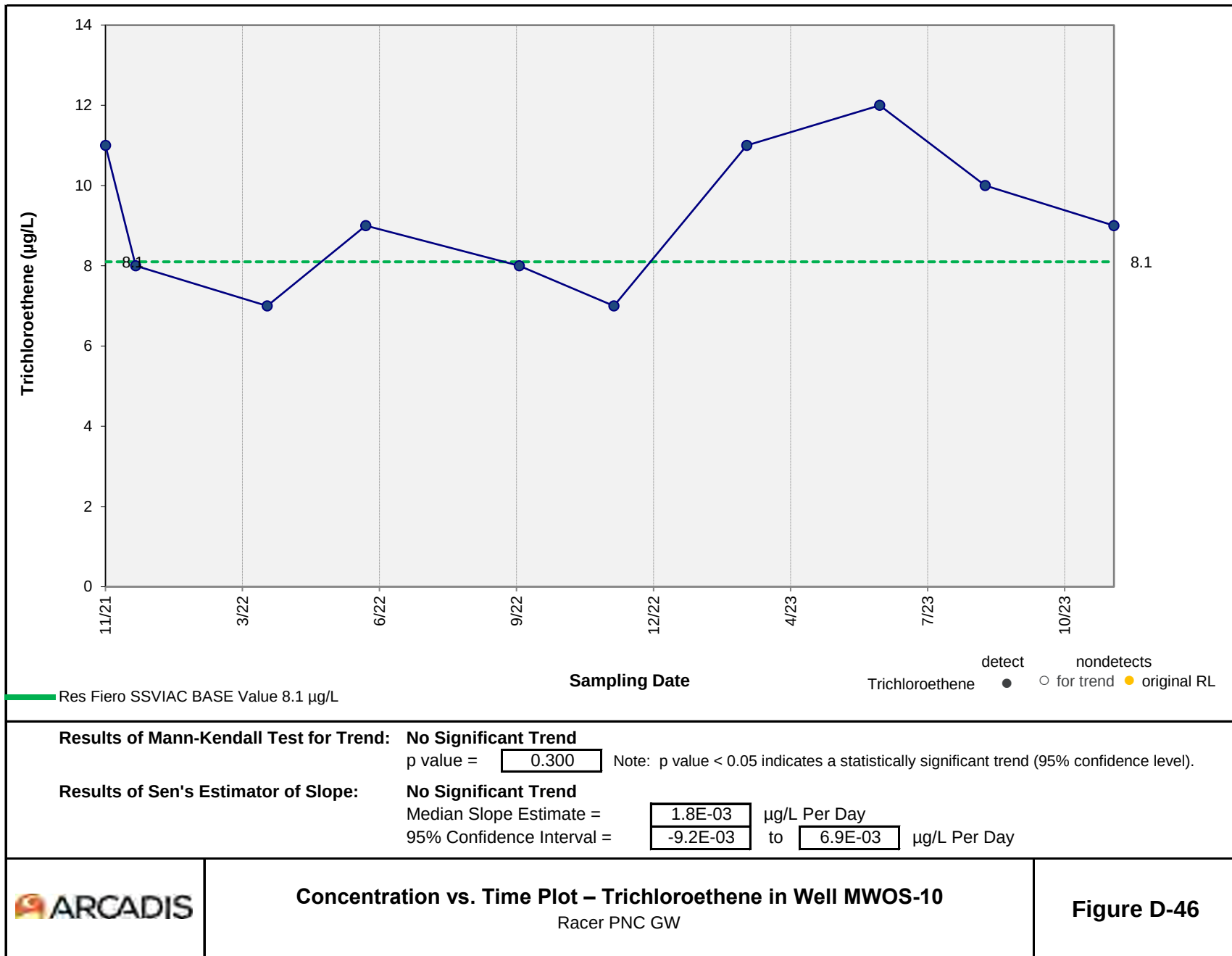


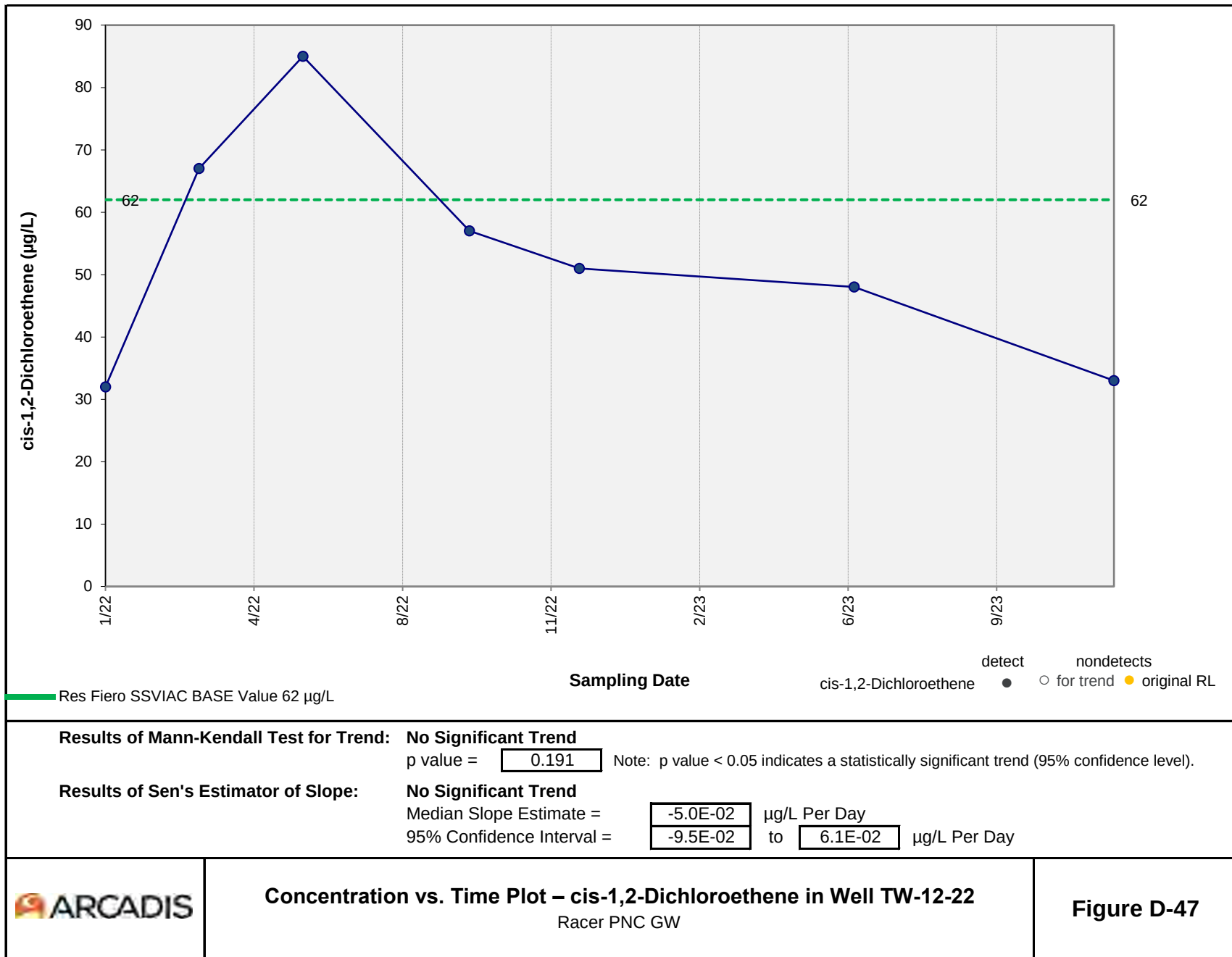


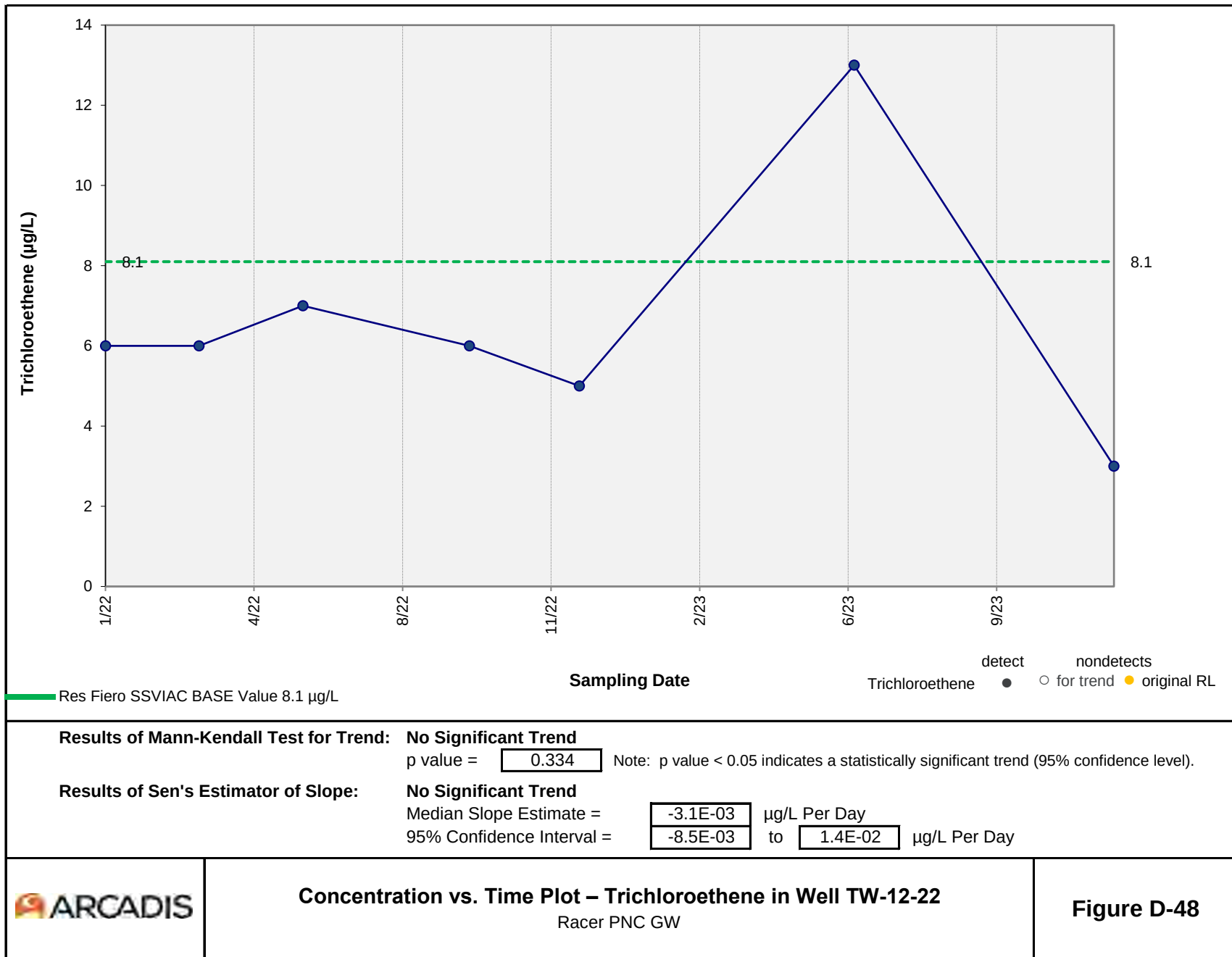


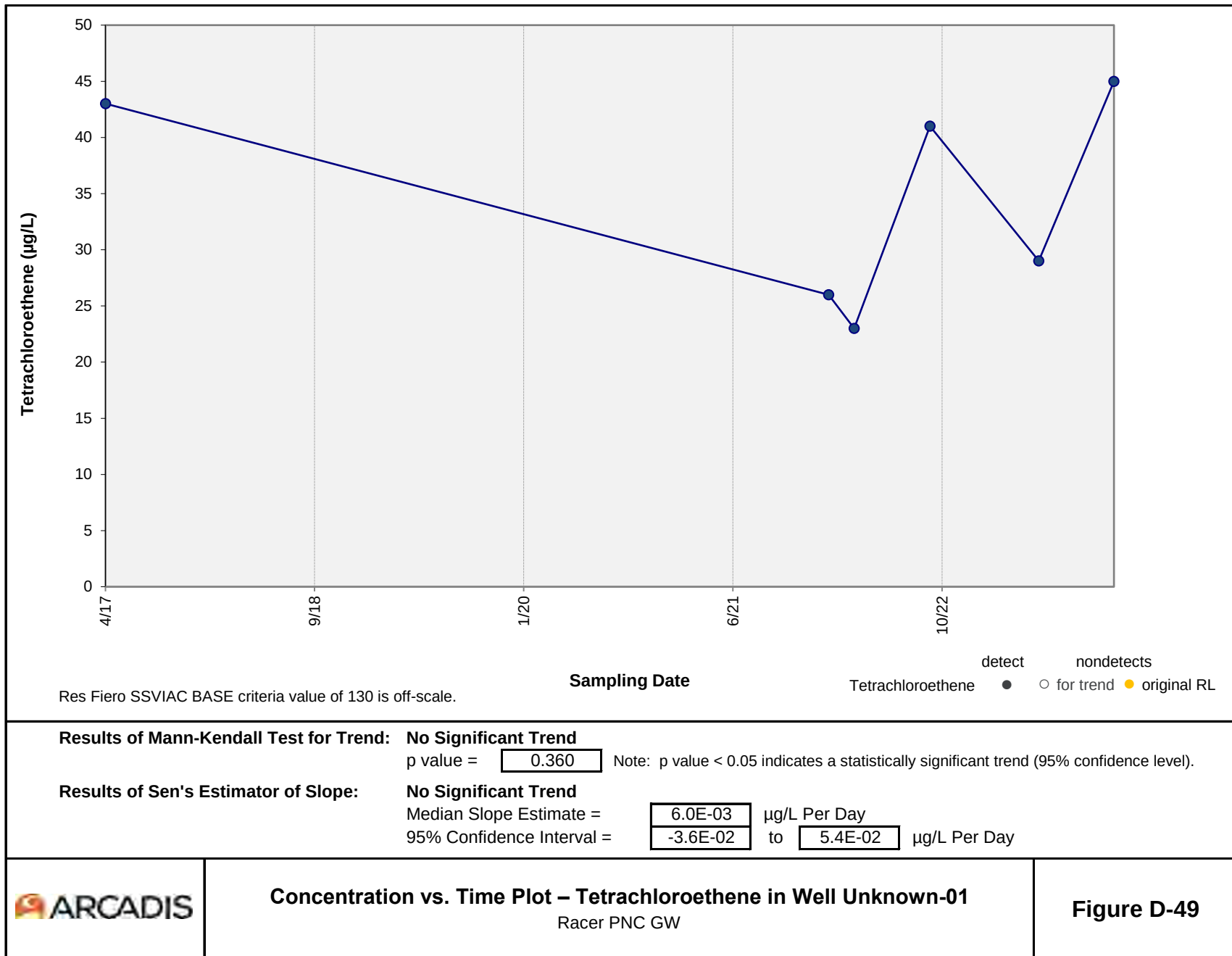




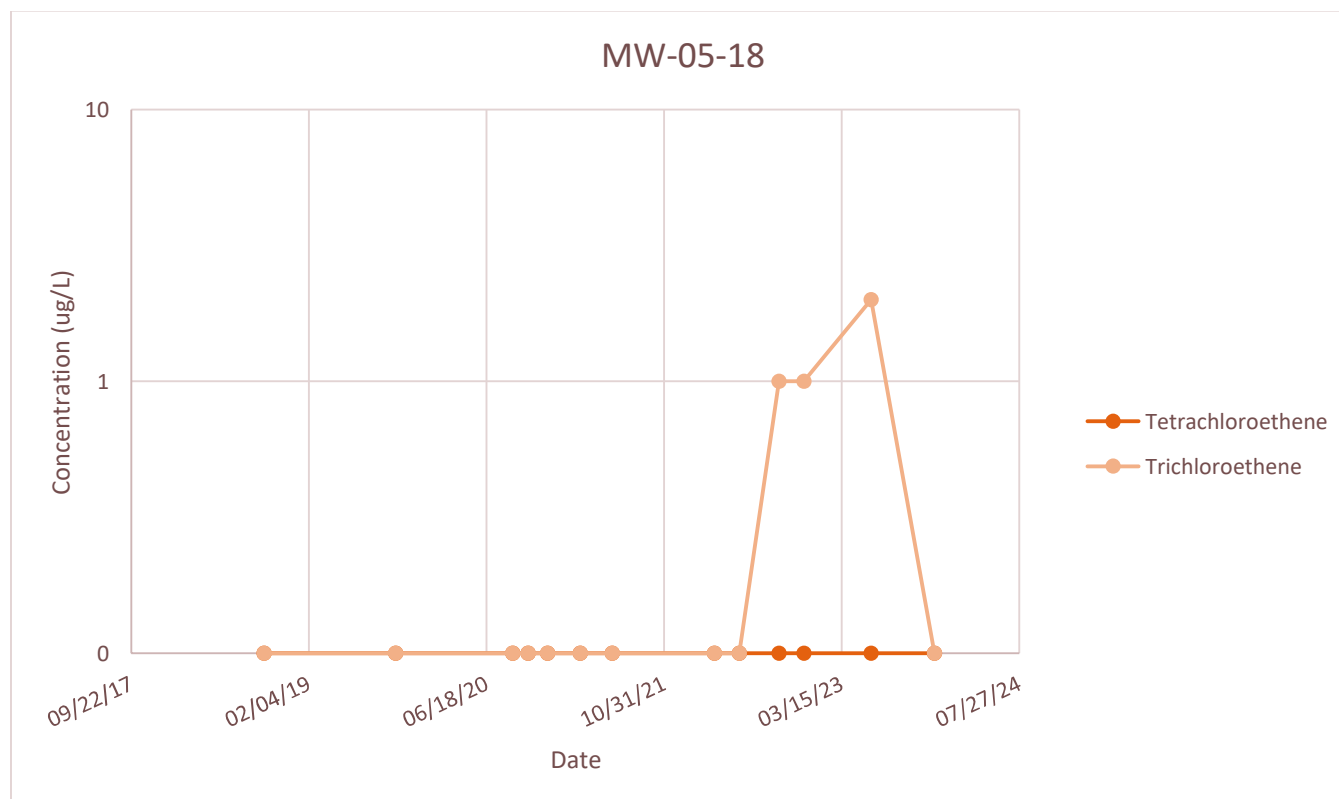
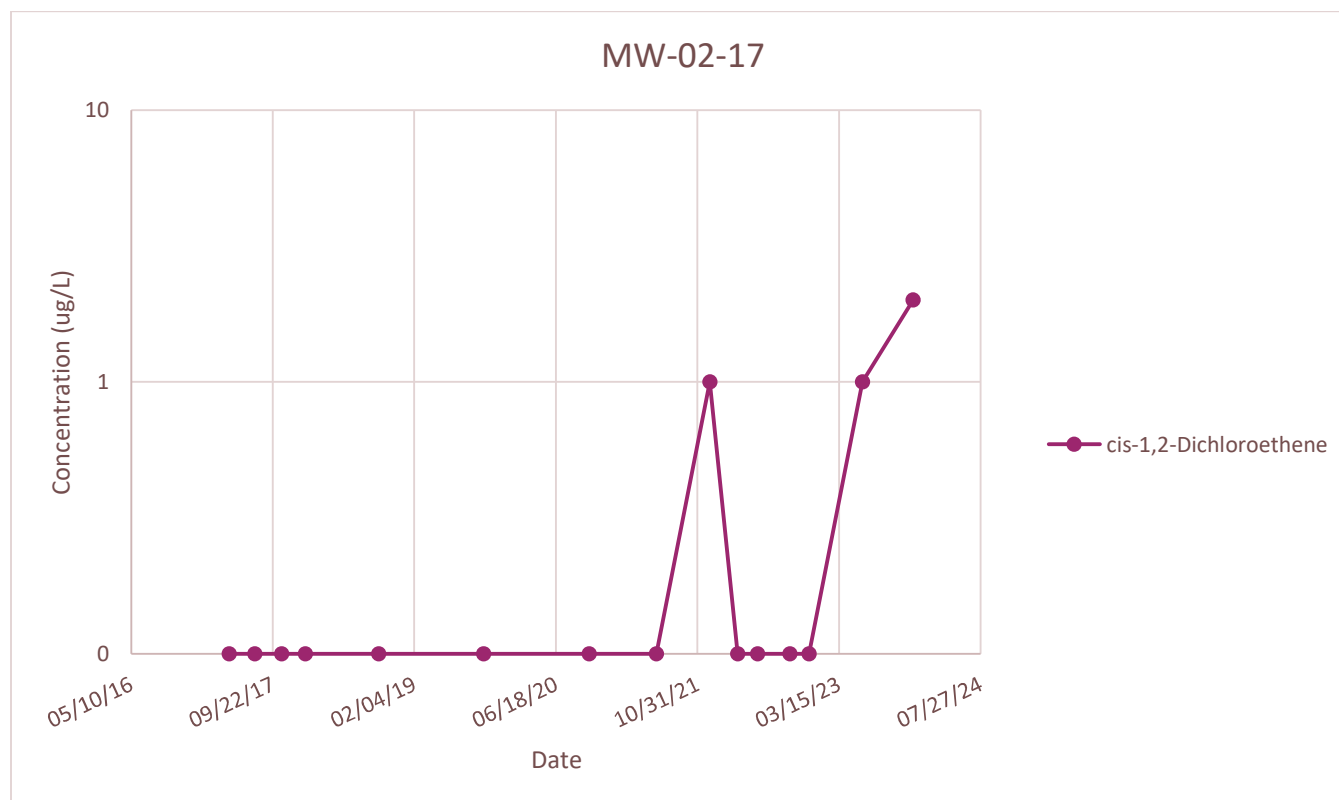




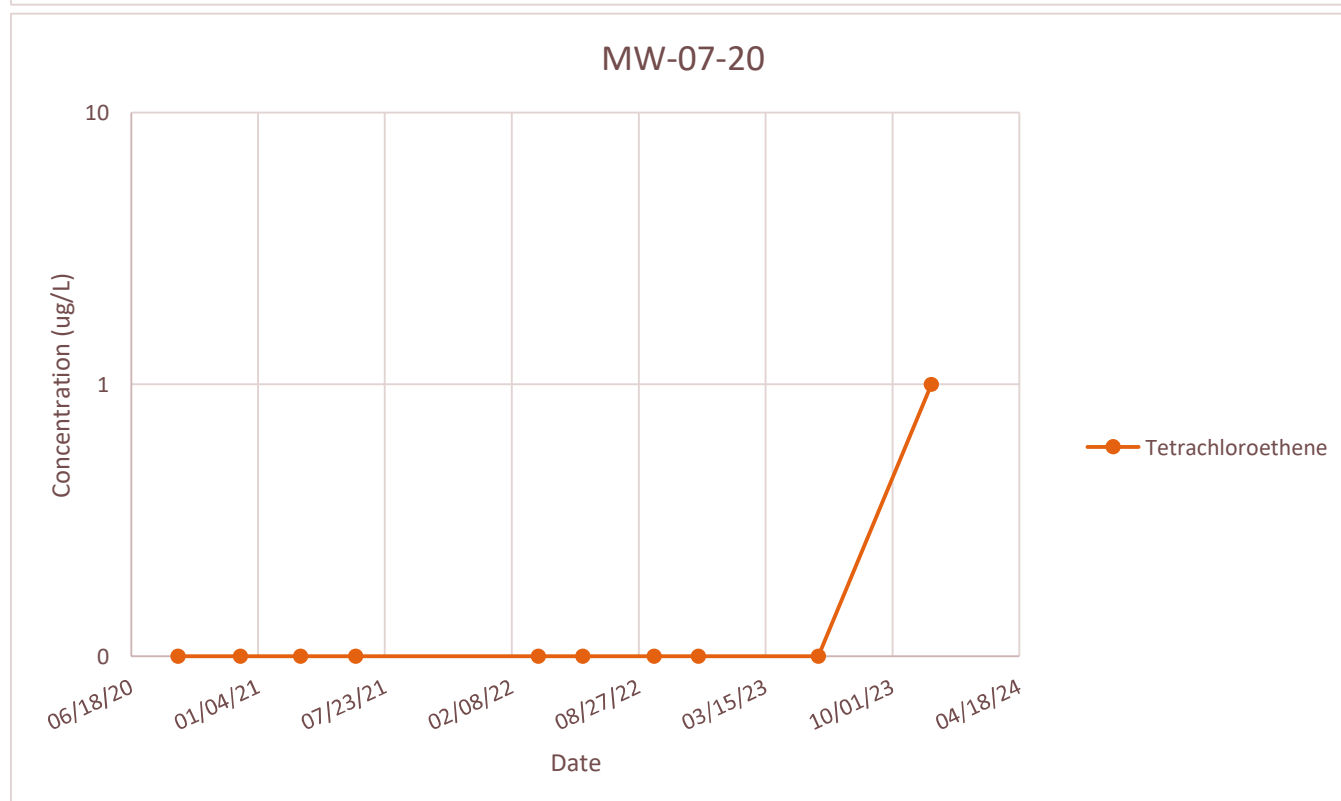
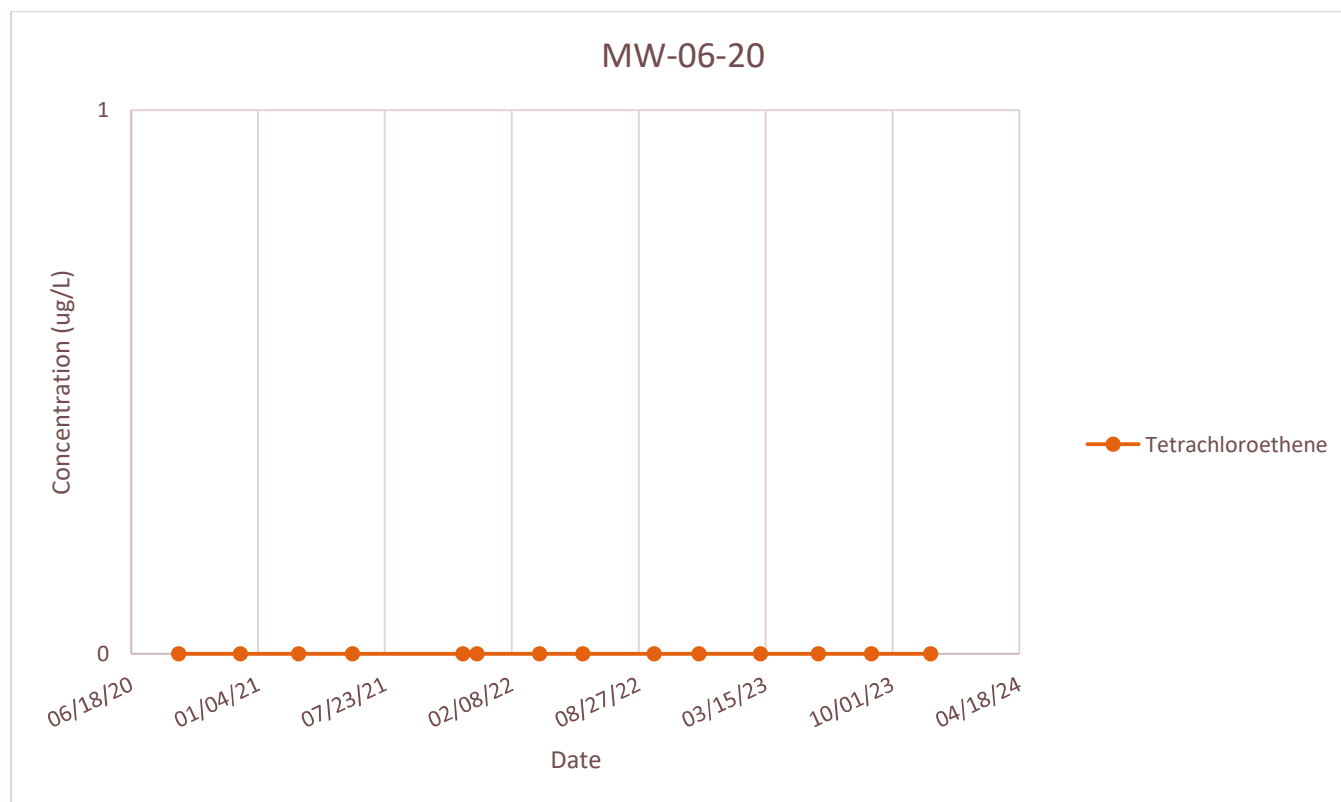




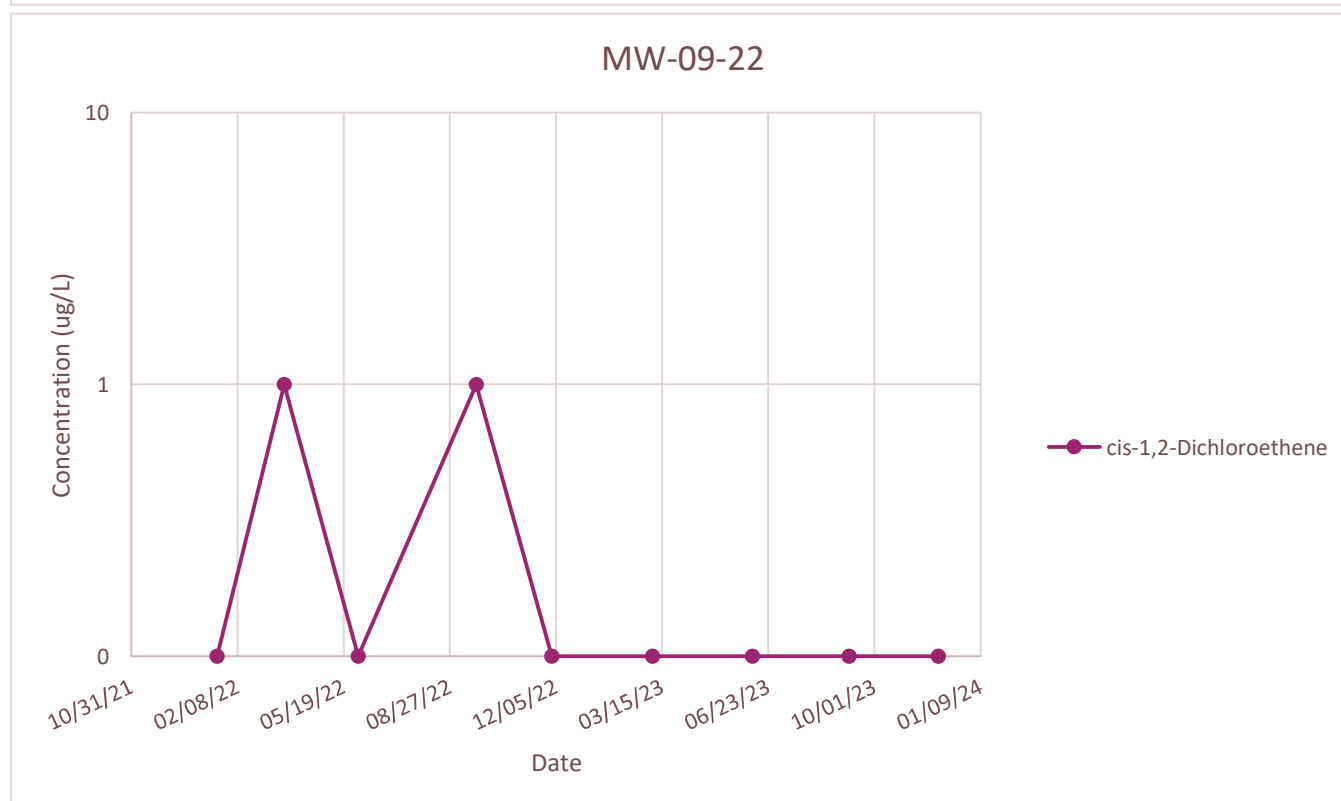
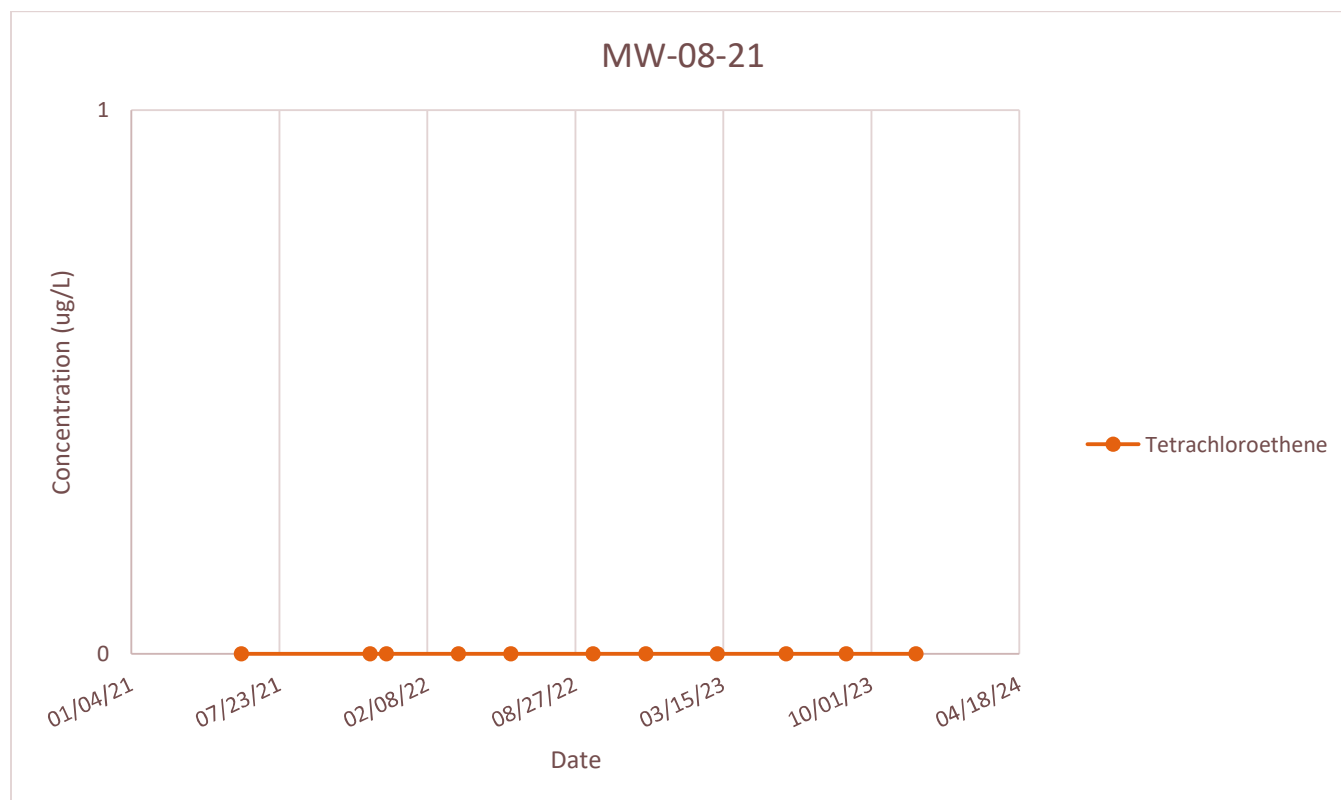
Groundwater Trend Graphs



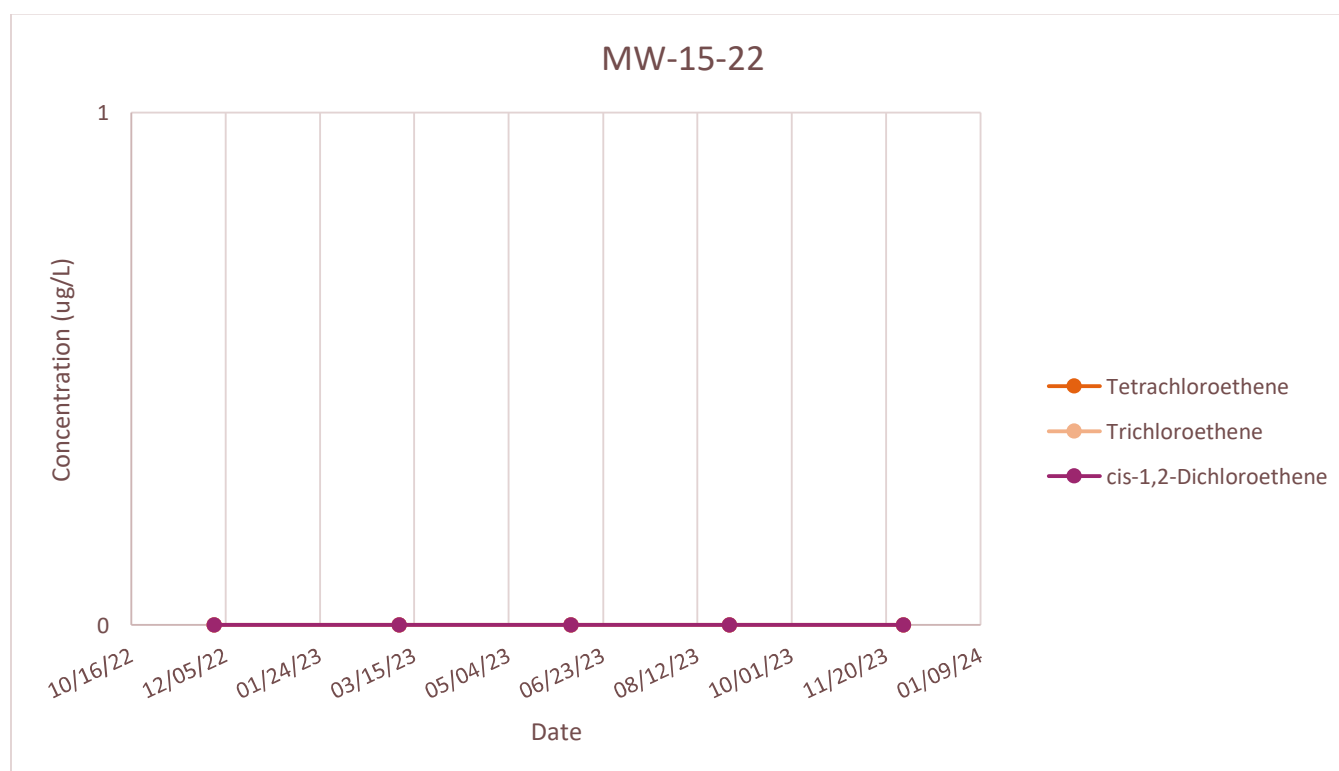
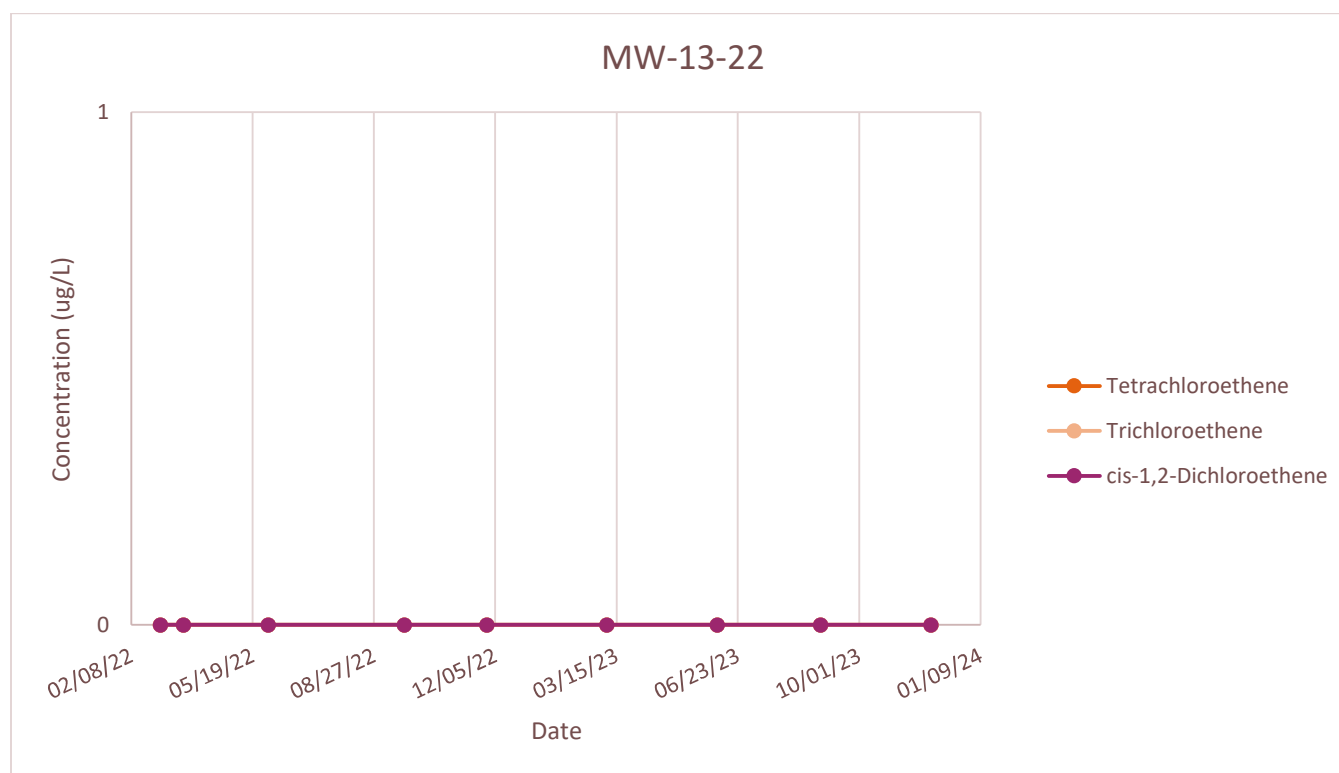
Groundwater Trend Graphs



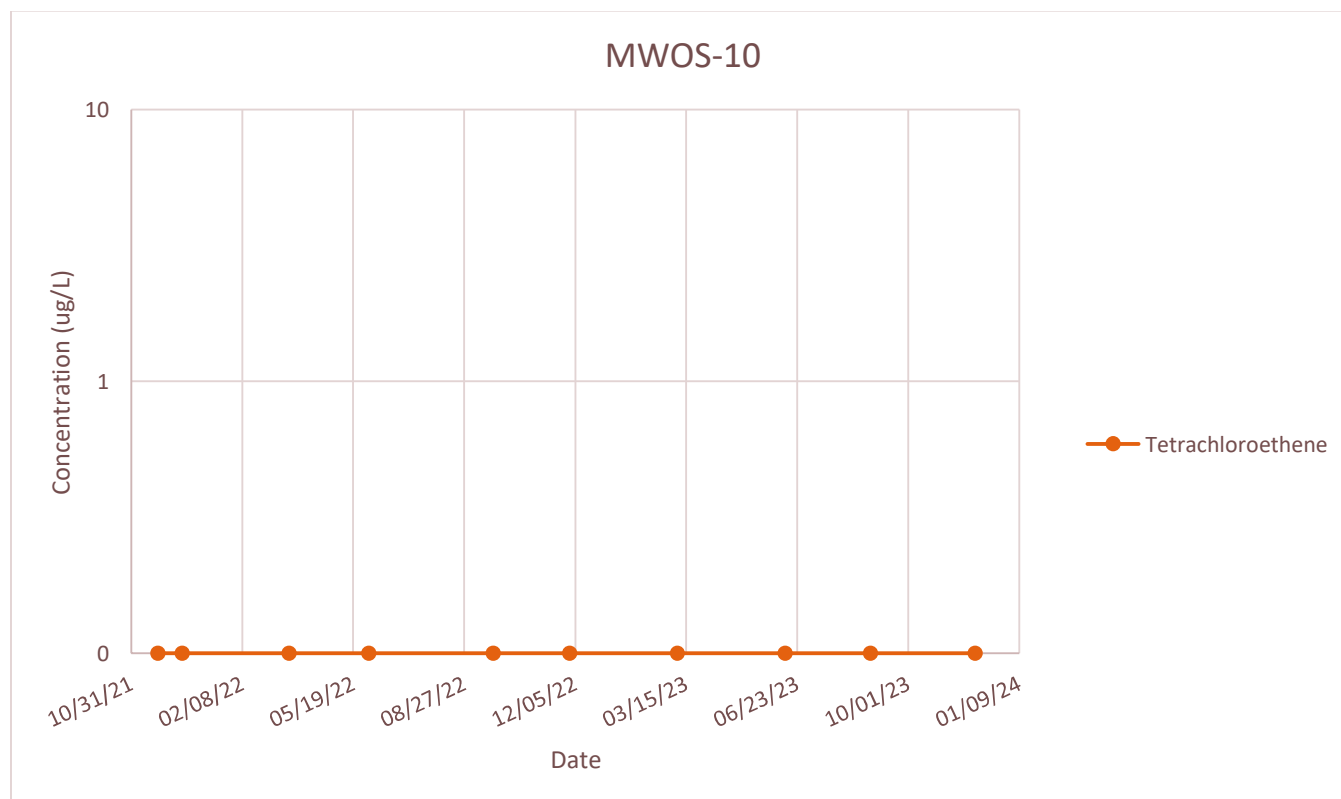
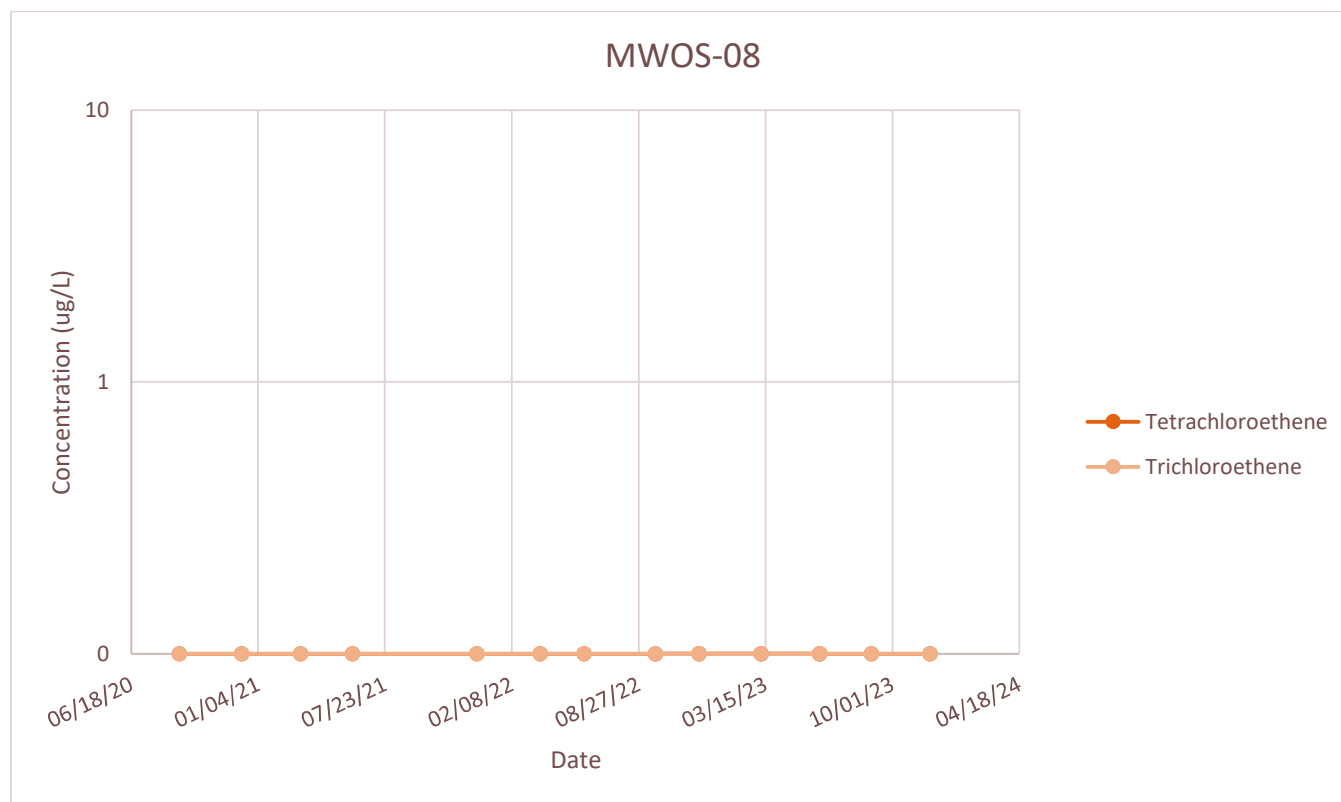
Groundwater Trend Graphs



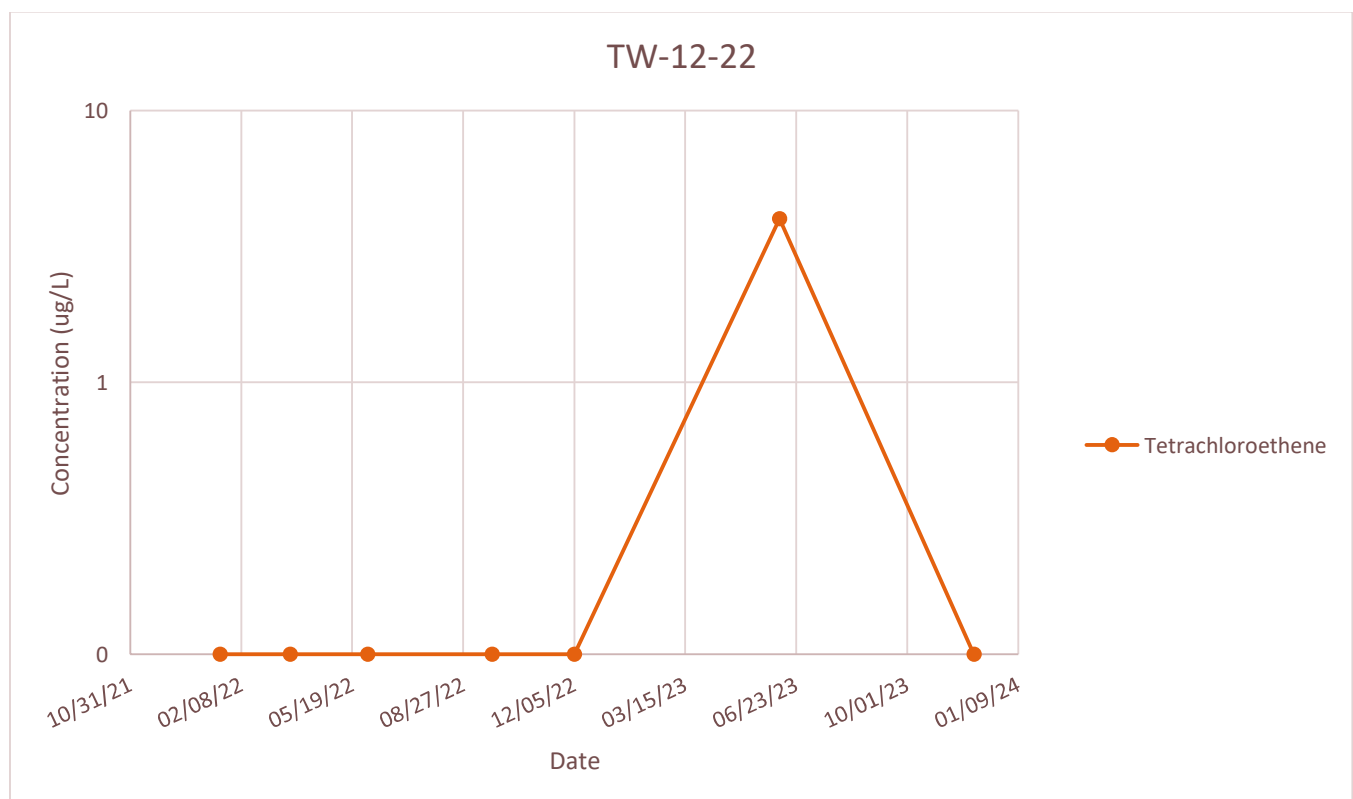
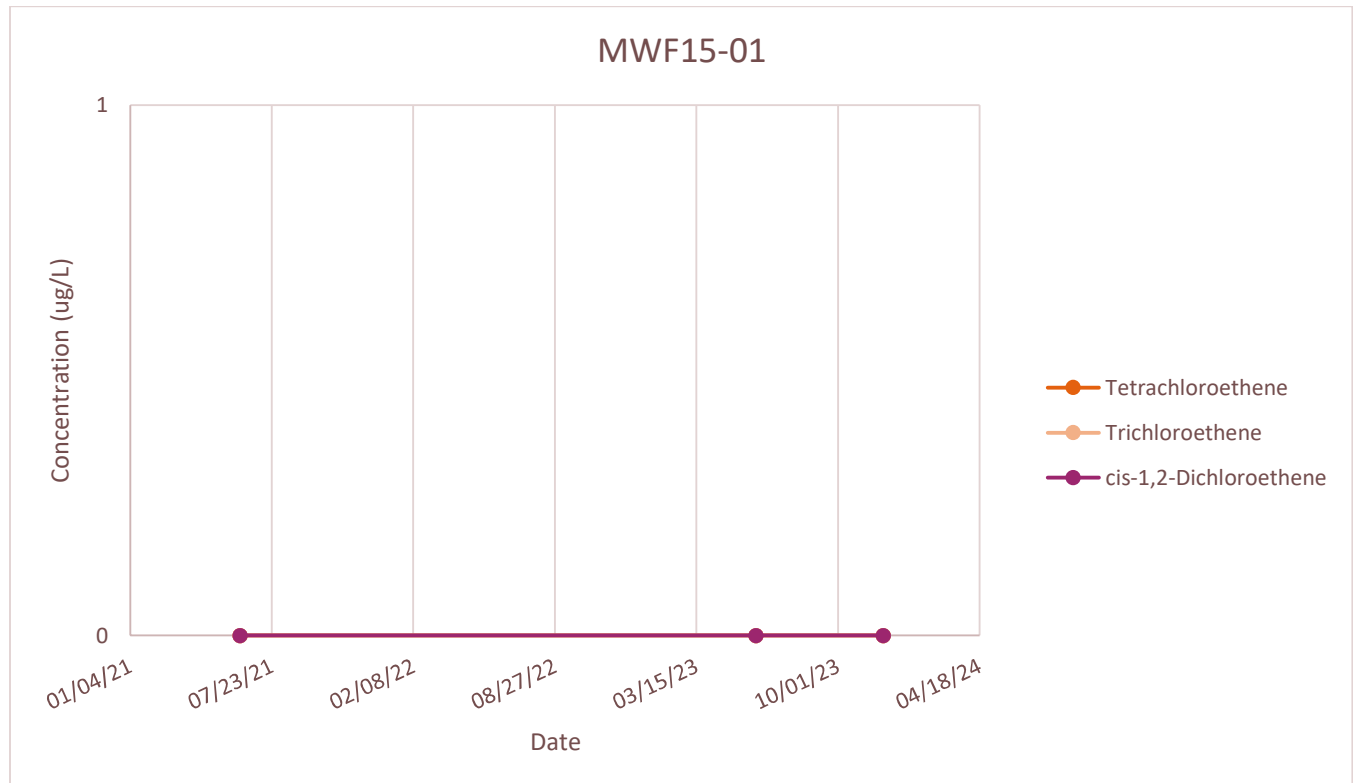
Groundwater Trend Graphs



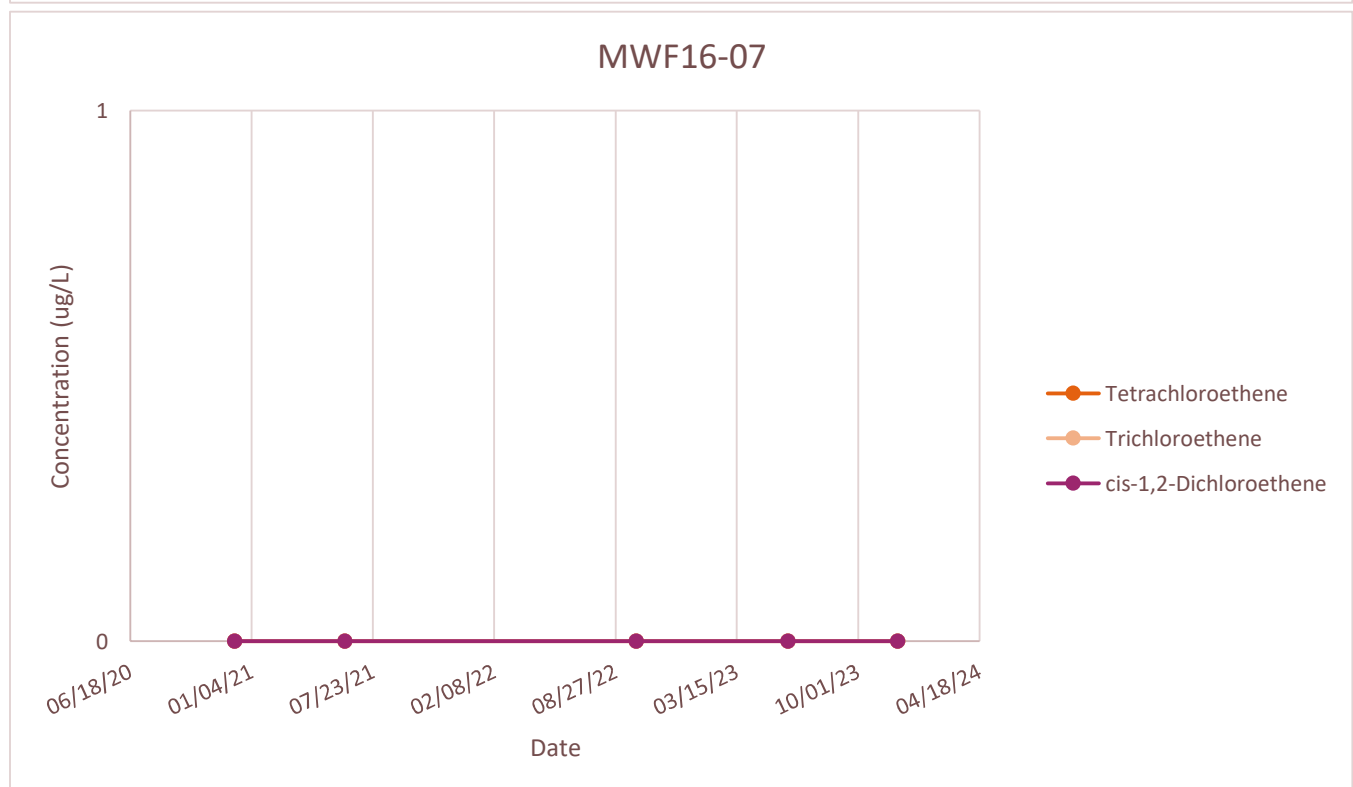
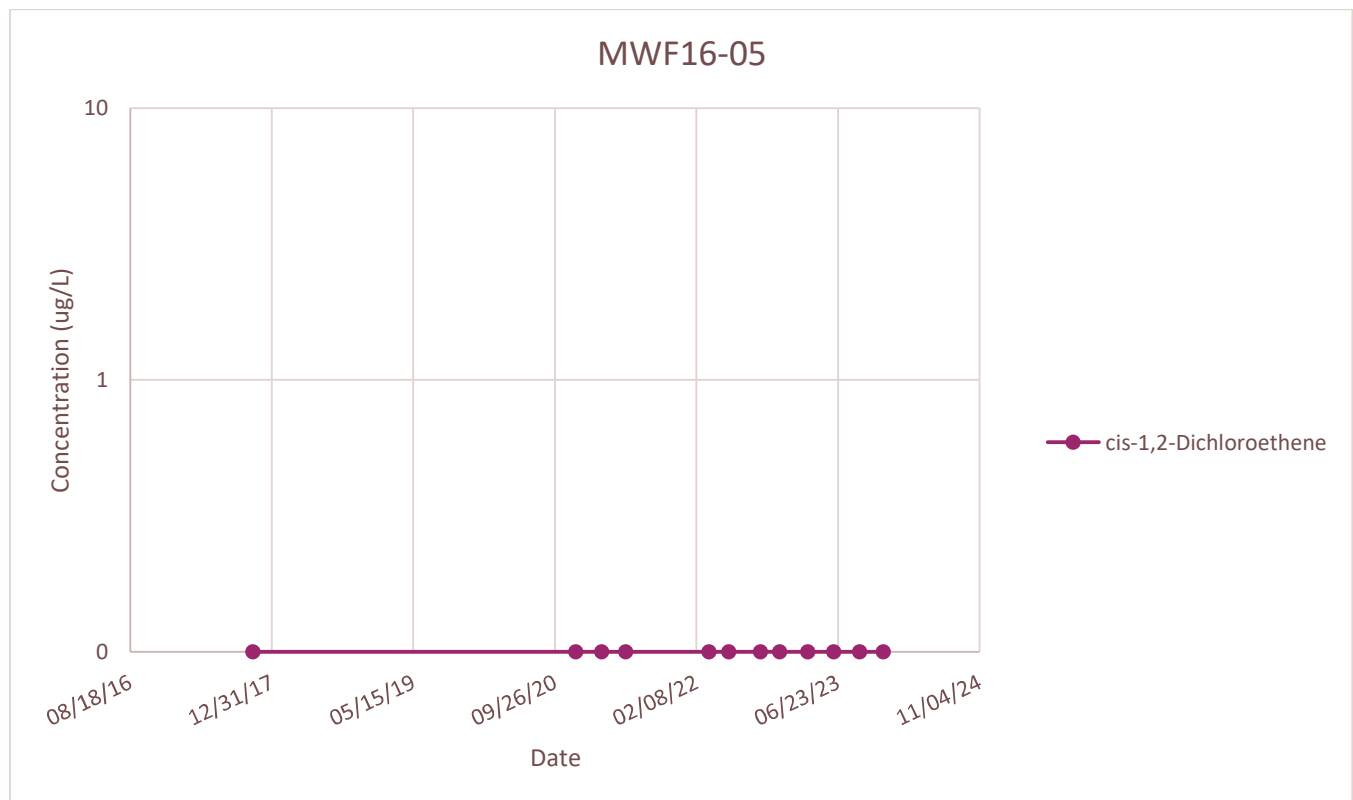
Groundwater Trend Graphs



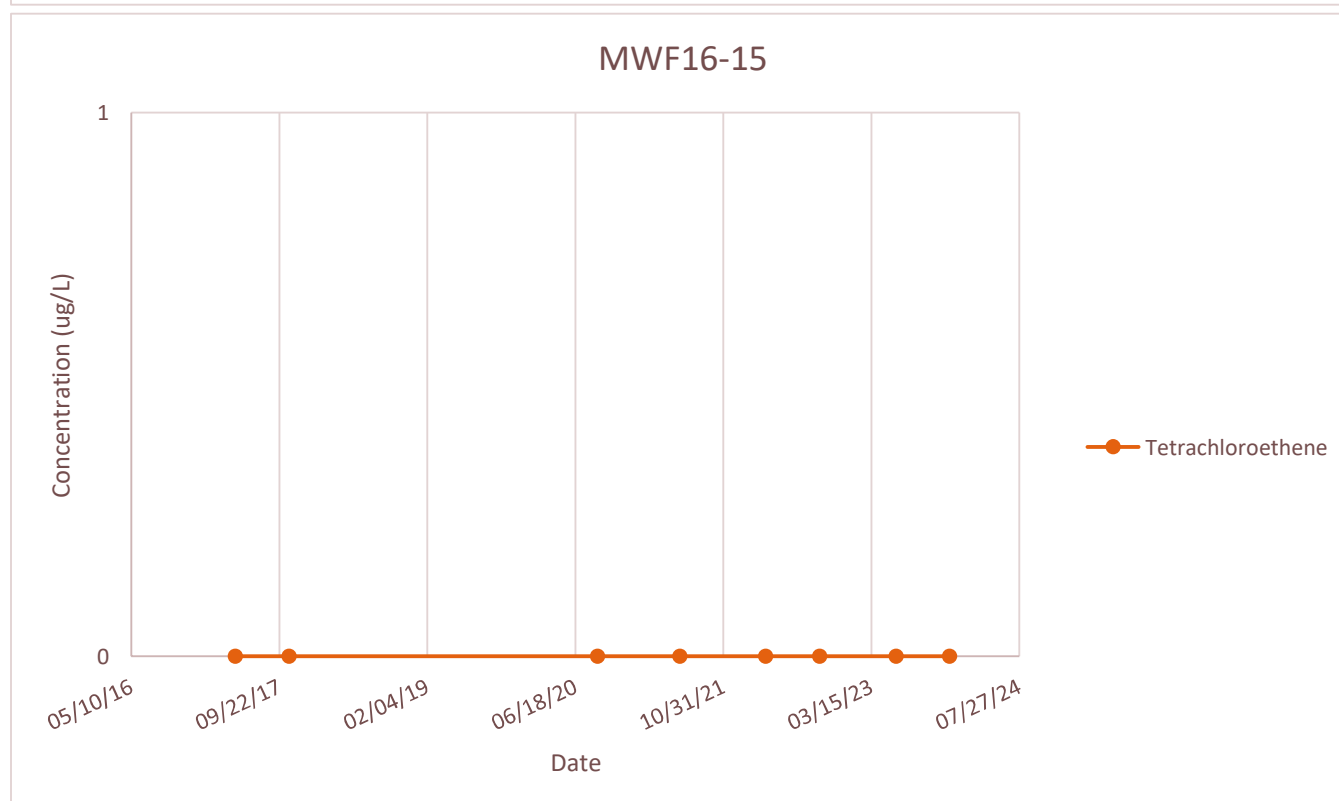
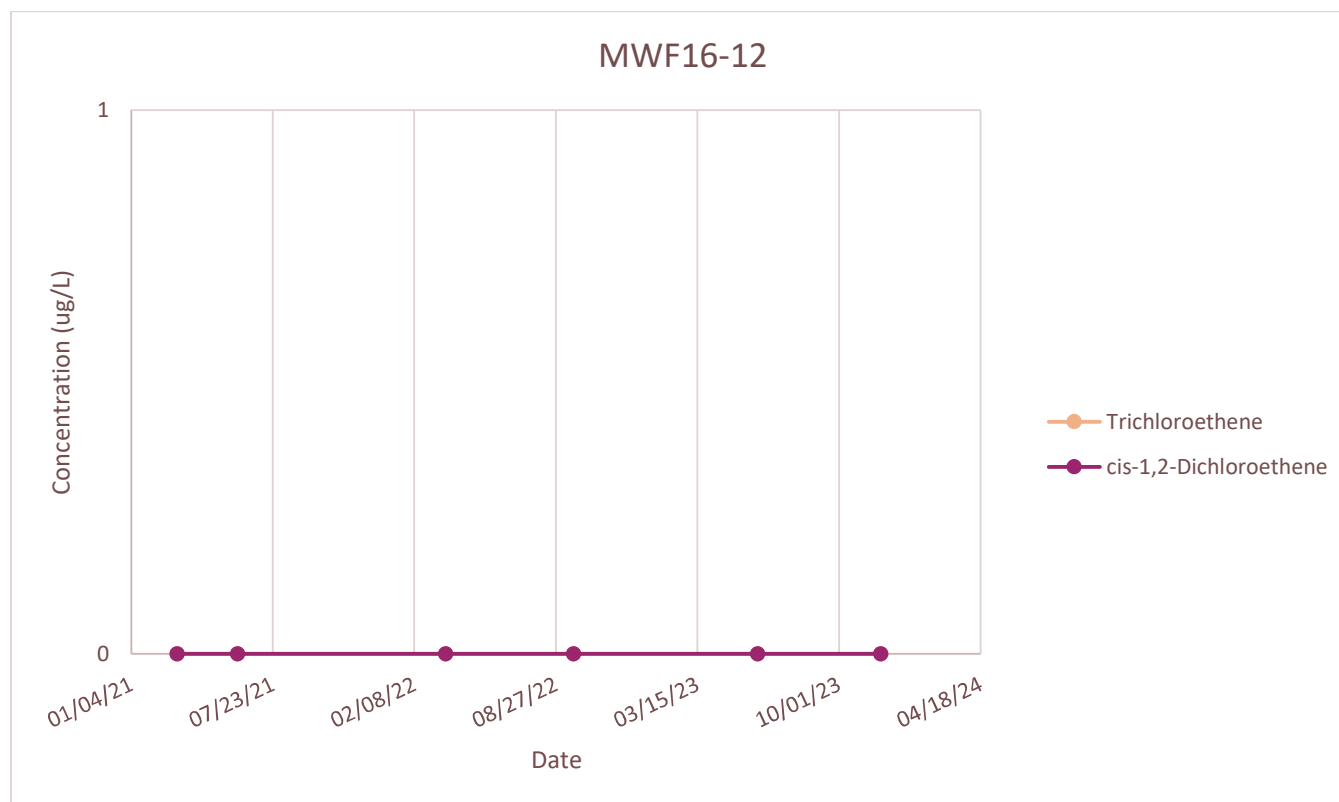
Groundwater Trend Graphs

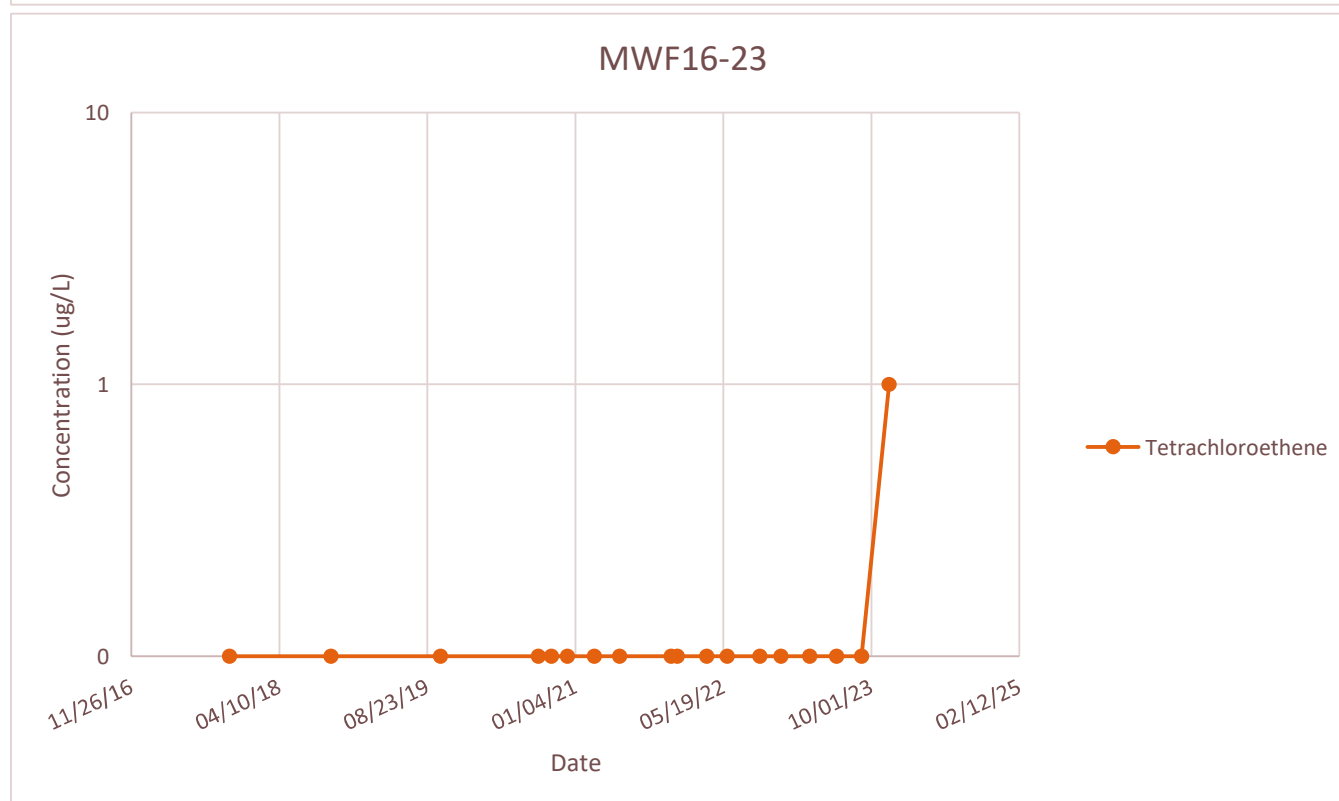
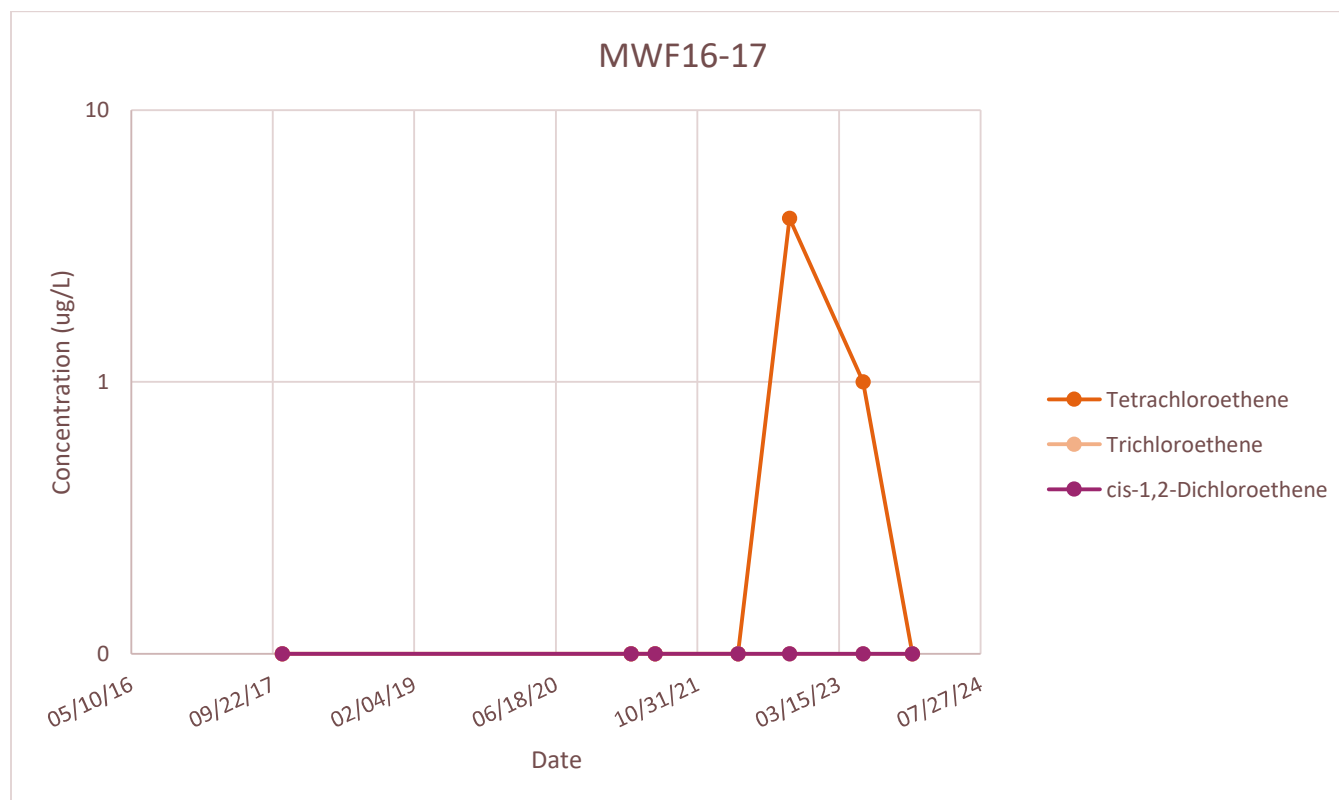


Groundwater Trend Graphs

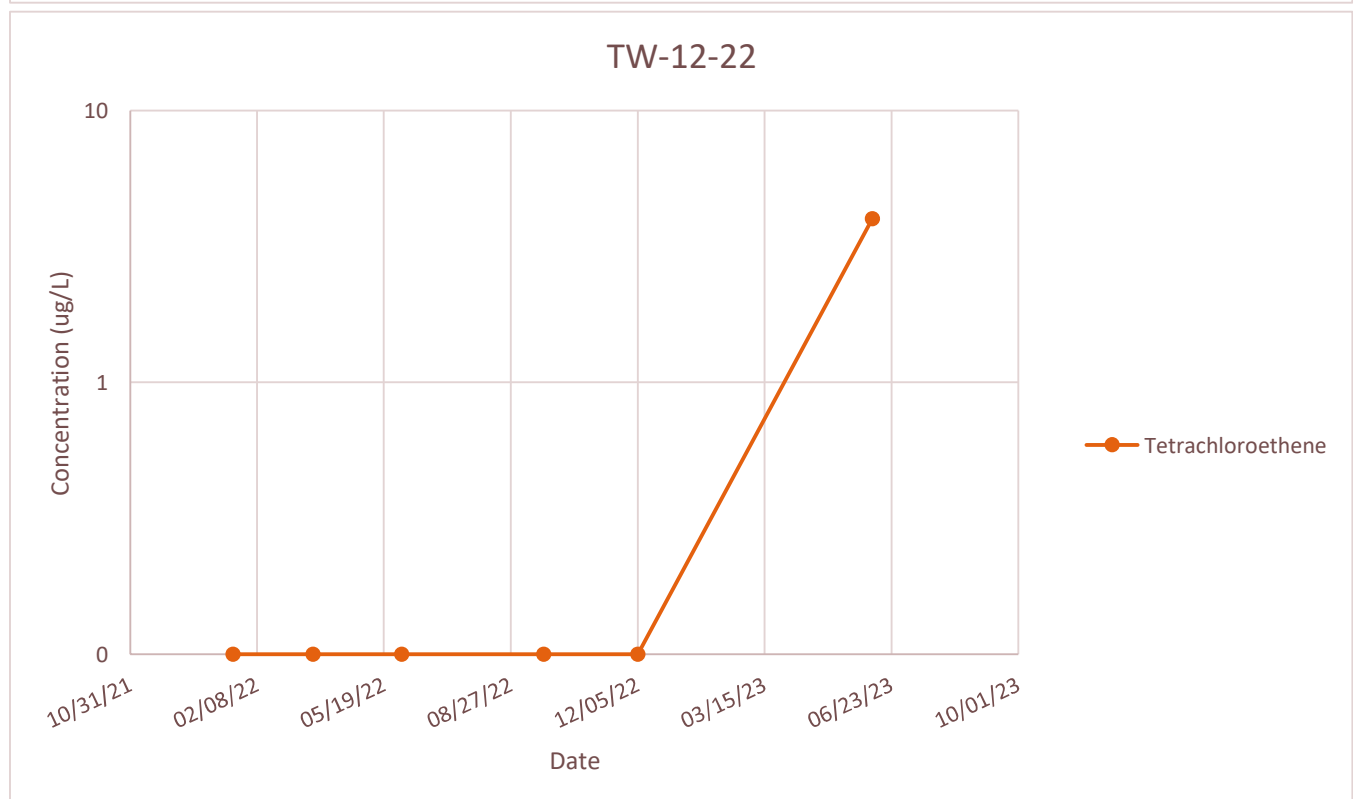
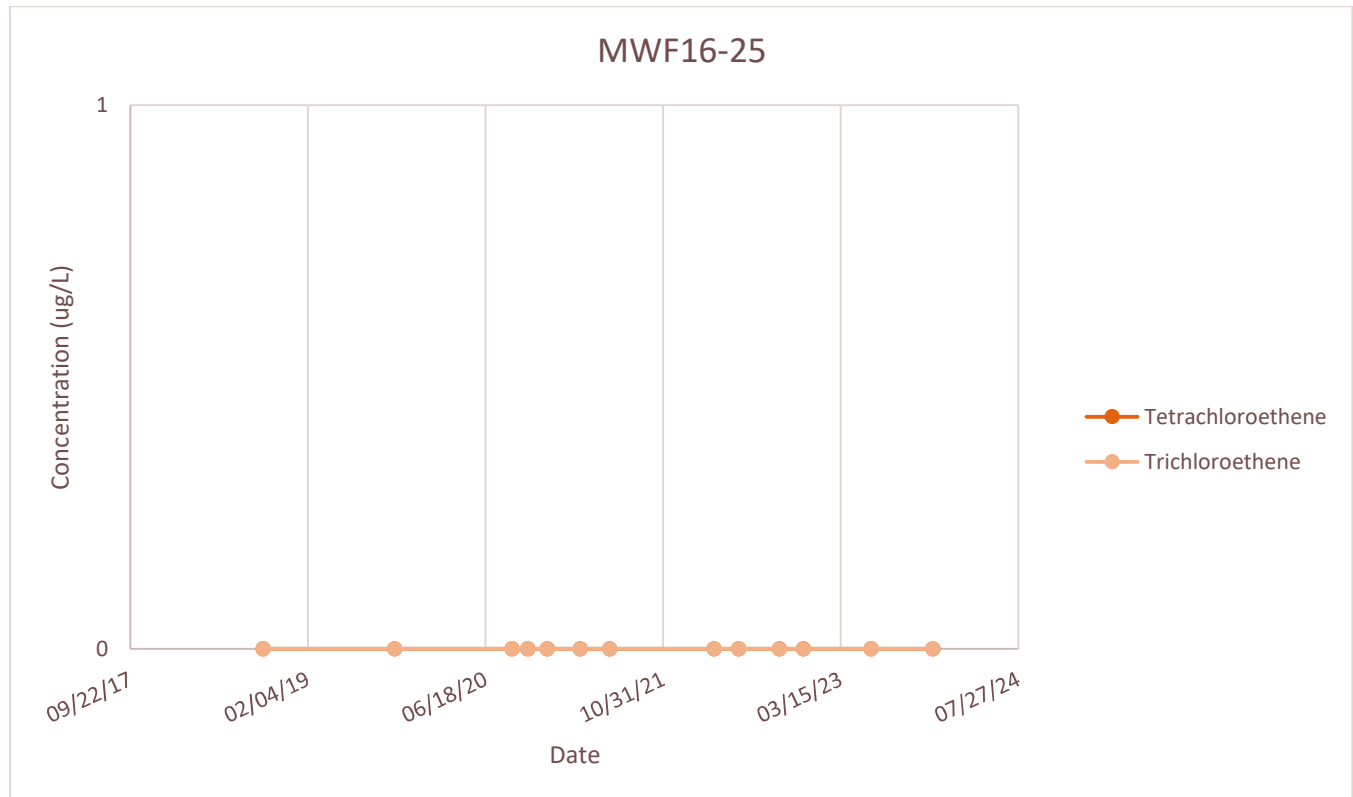


Groundwater Trend Graphs





Groundwater Trend Graphs



Groundwater Trend Graphs

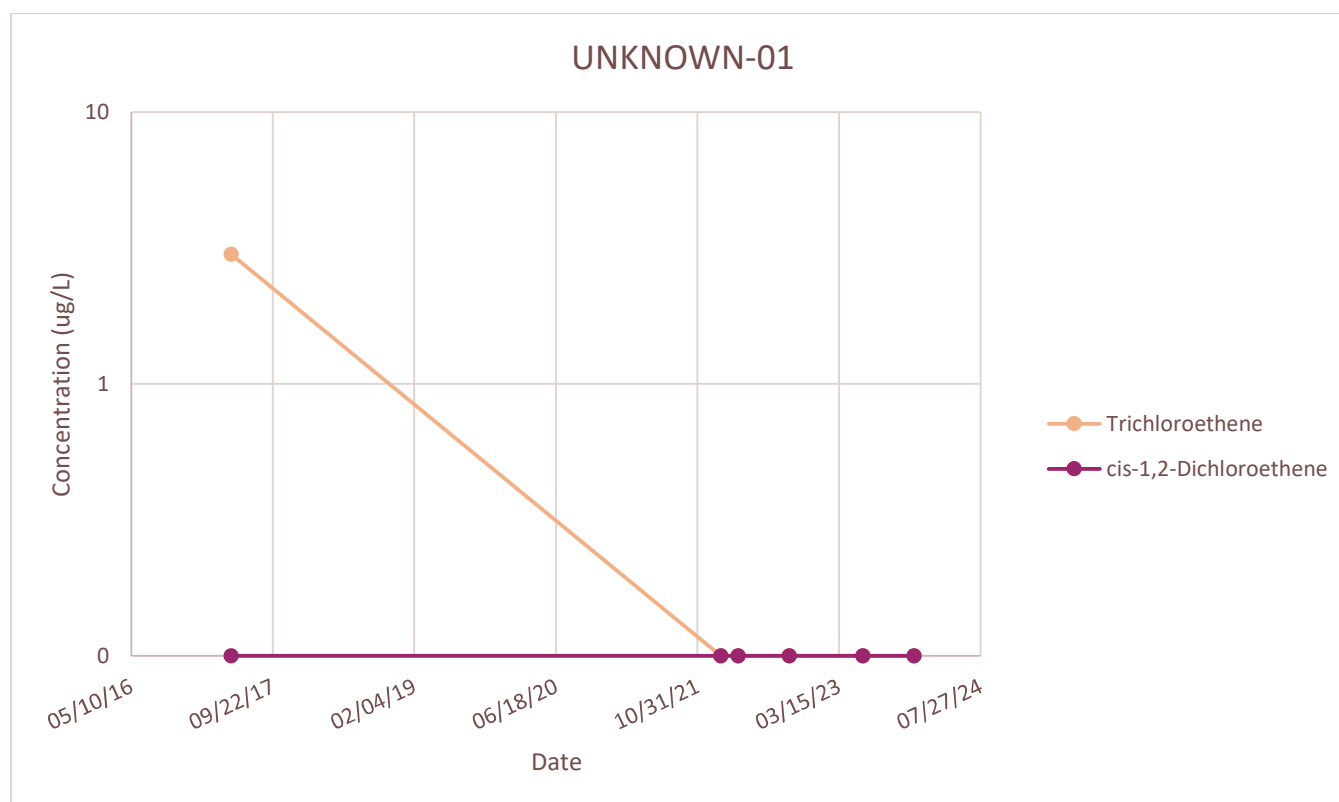


TABLE D-1
Soil Vapor Summary Statistics and Trend Results (Excluding November 2022)
March, 2024

Well ID	Analyte	Date Range	Figure	FOD	Detected Results Summary ¹				Mann-Kendall Test ²				Sen's Estimator of Slope ²			
					Range	Mean	Median	SD	Result ⁴	MK Result Note	P-Value	S Value	Result ⁴	Sen's Result Note	Slope (Units/Day)	95% CI (Units/Day)
SV-01-21	Tetrachloroethylene	05/21 - 11/23	D-1	8 / 10	7.5 - 17	11.9	11.5	3.1	NST	--	0.500	-1	NST	--	0	-0.0139 to 0.0121
SV-01-21	Trichloroethylene	05/21 - 11/23	D-2	10 / 10	8 - 32	15.6	14	7.6	NST	--	0.466	-2	NST	--	-0.00165	-0.0164 to 0.0211
SV-02-21	Tetrachloroethylene	05/21 - 11/23	D-3	9 / 10	7.5 - 12	9	8.3	1.5	NST	--	0.466	2	NST	--	0.000186	-0.00578 to 0.00461
SV-02-21	Trichloroethylene	05/21 - 11/23	D-4	10 / 10	50 - 83	60.9	57.5	11.7	DWN	--	0.023	-23	DWN	--	-0.0223	-0.0531 to -0.00137
SV-04-21	Trichloroethylene	10/21 - 11/23	D-5	9 / 9	11 - 18	15.6	16	2.7	NST	--	0.460	-2	NST	--	0	-0.0118 to 0.00988
SV-06-21	Trichloroethylene	03/22 - 11/23	D-6	7 / 7	13 - 48	20	16	12.4	NST	5a	0.052	12	NST	5a	0.00650	-0.00371 to 0.0187

Abbreviations:

-- insufficient data for calculating statistics (n < 4) or not available
FOD = frequency of detection (# detects / # samples)
mean = arithmetic mean
SD = standard deviation

NST = no significant trend
NT = no trend
DWN = downward trend
UP = upward trend

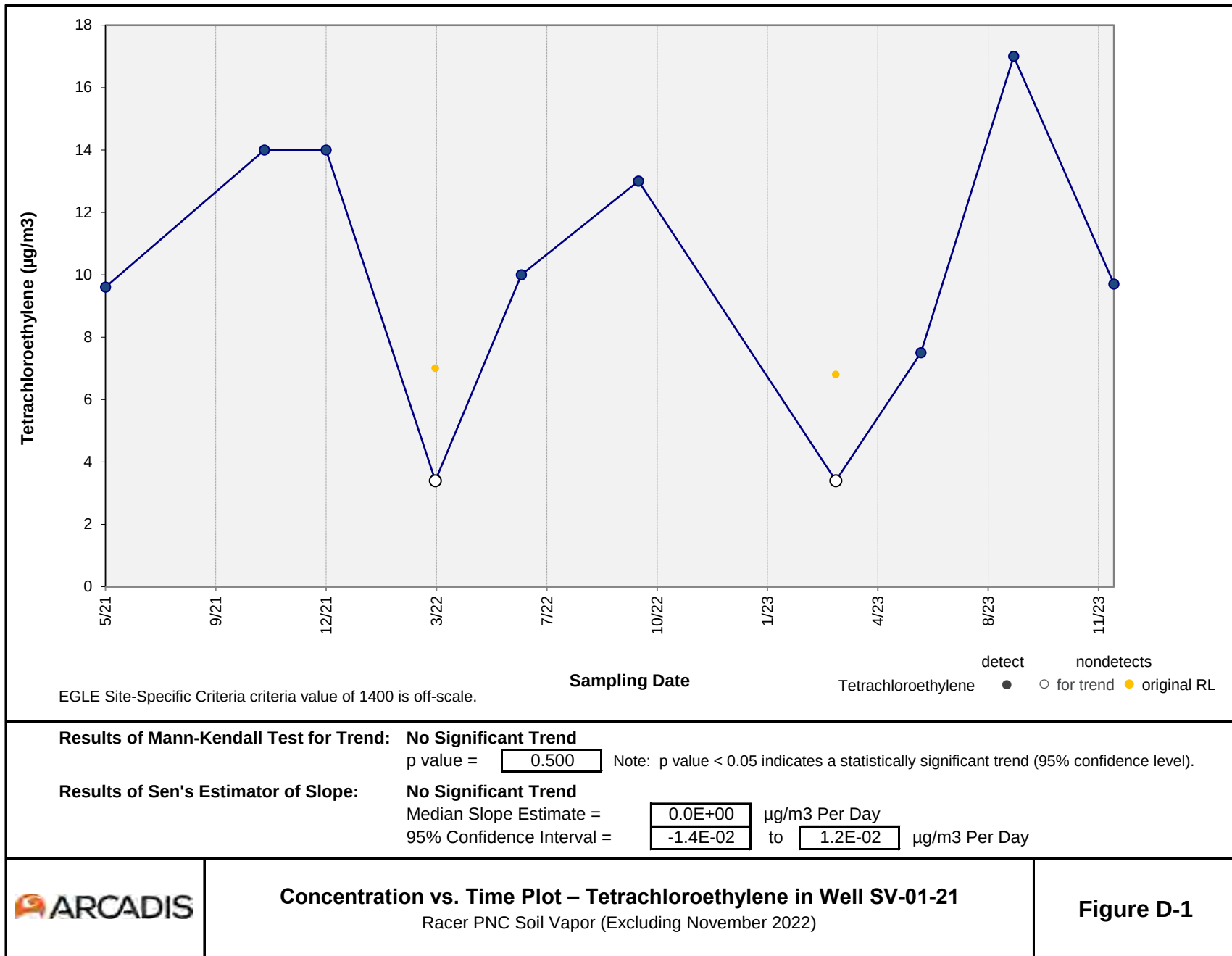
H₀ = null hypothesis: no significant trend (slope = 0)
H_a = alternative hypothesis: significant trend (slope ≠ 0)
95% CI = 95% confidence interval

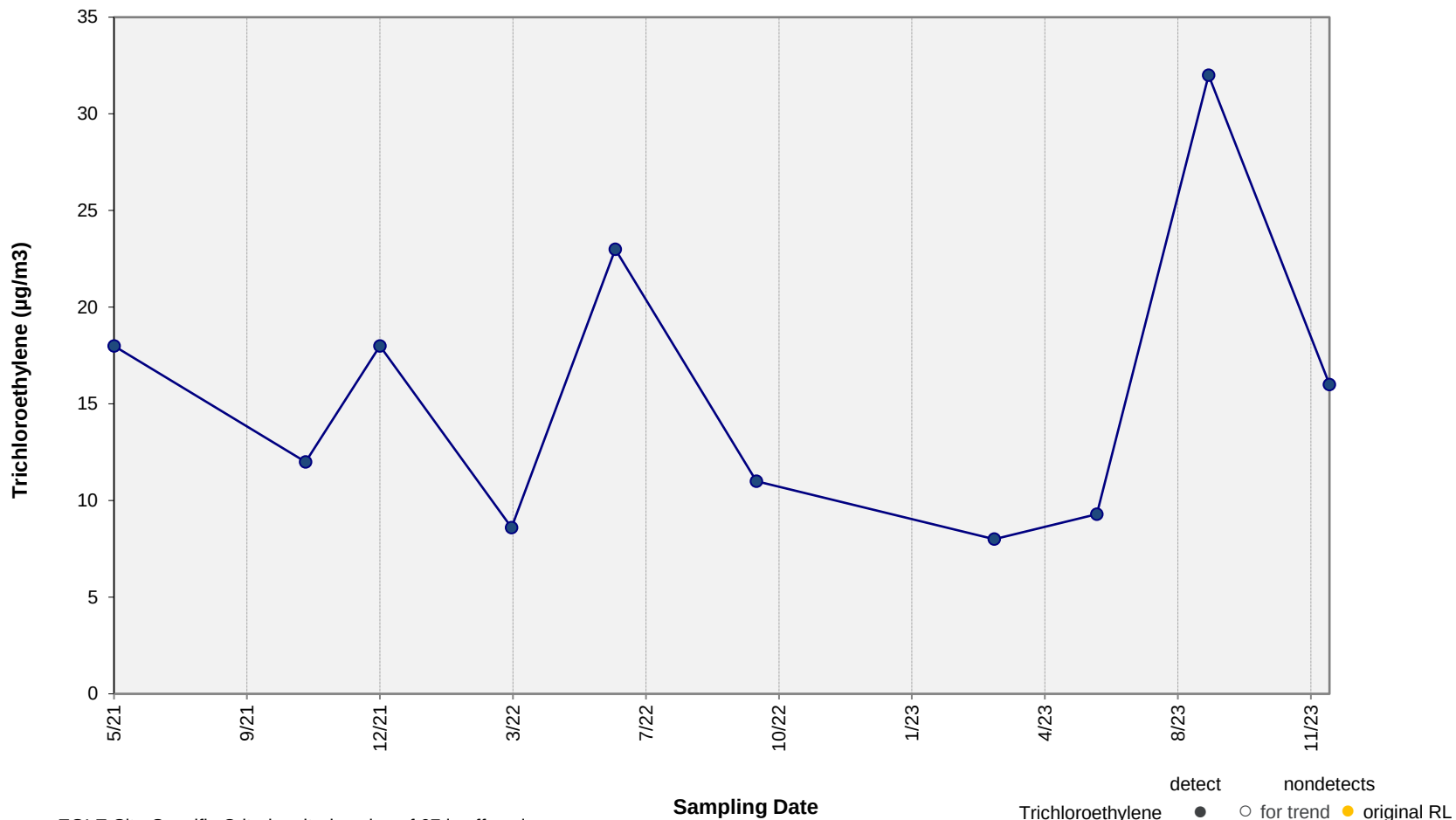
Notes:

1. All analytical results are in µg/L.
2. Trend results are presented when at least four samples and one detected value are available. Significance of trends evaluated at 95% confidence (alpha = 0.05).
3. Non-detects were assigned a common value less than the minimum detected value, equal to half the minimum reporting limit (RL) in the dataset (USEPA, 2009).
If half the minimum RL was greater than the minimum detected value, then half the minimum detect was assigned.
4. Statistically significant trend defined as having p-value ≤ 0.05, or 95% confidence.
- 5a. MK and Sen's Trend results for datasets with fewer than 8 samples may not be reliable and should be treated with caution.

Reference:

USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Unified Guidance. EPA/530/R-09/007, 2009.





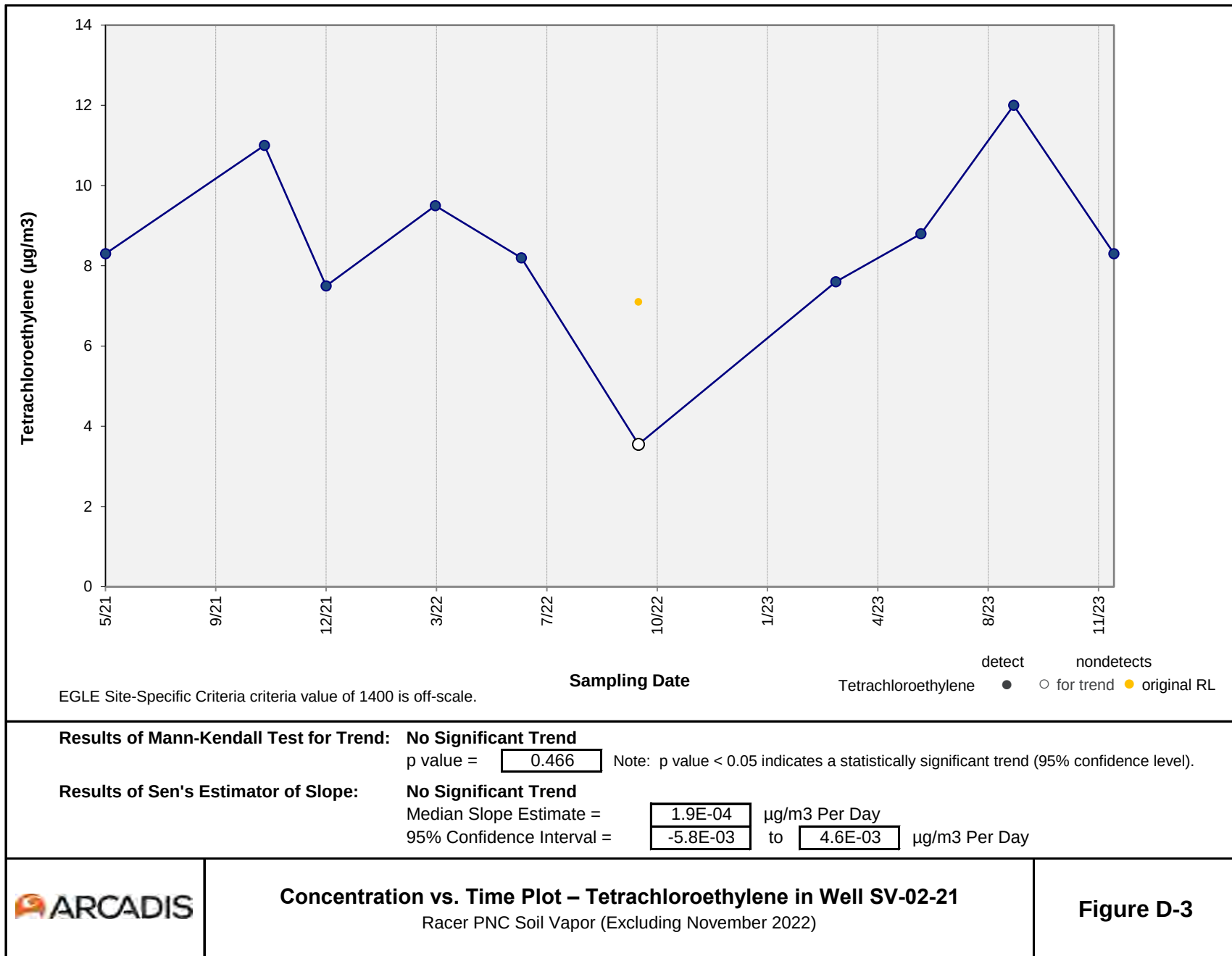
Results of Mann-Kendall Test for Trend: No Significant Trend
 p value = 0.466 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

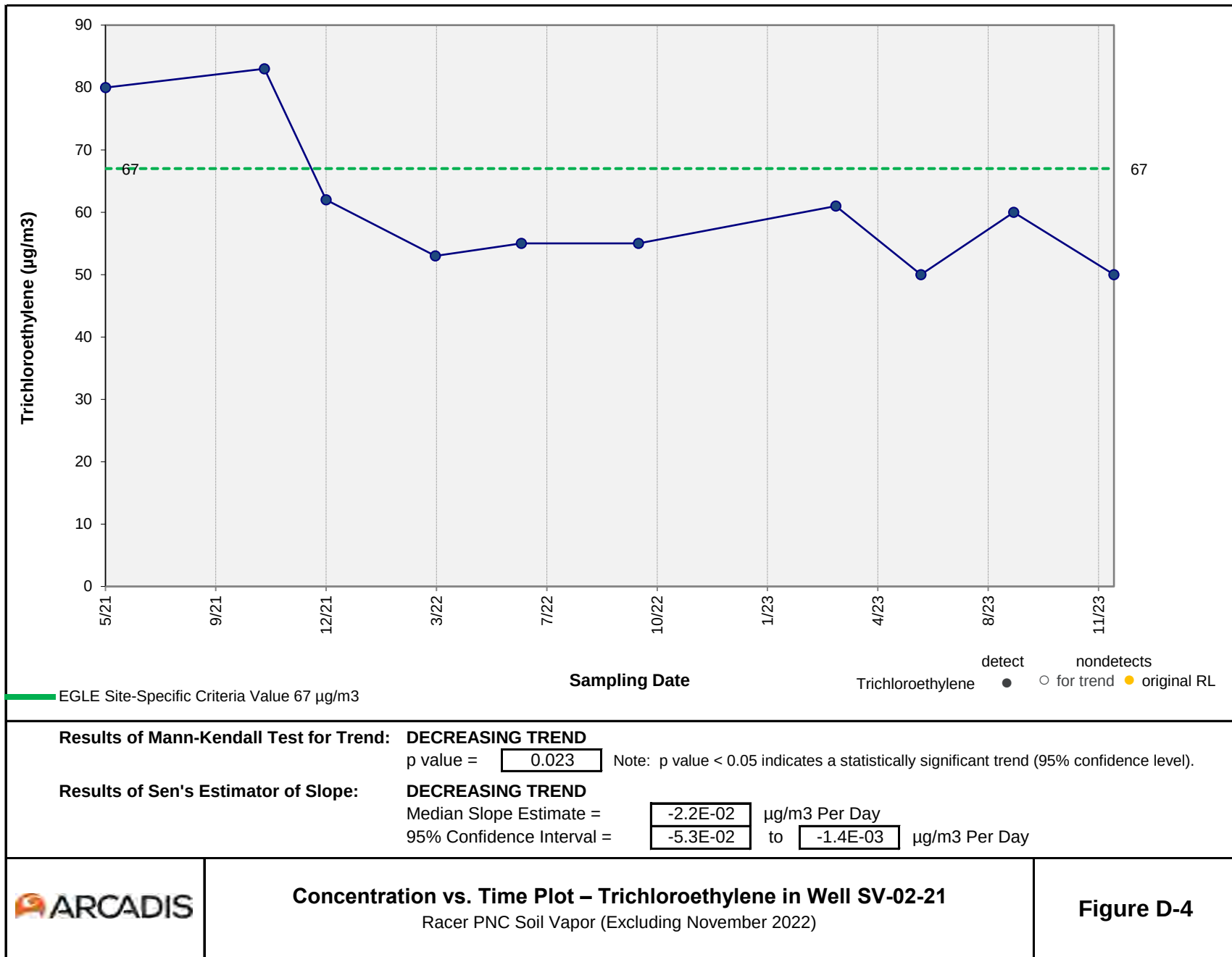
Results of Sen's Estimator of Slope: No Significant Trend
 Median Slope Estimate = -1.7E-03 µg/m3 Per Day
 95% Confidence Interval = -1.6E-02 to 2.1E-02 µg/m3 Per Day

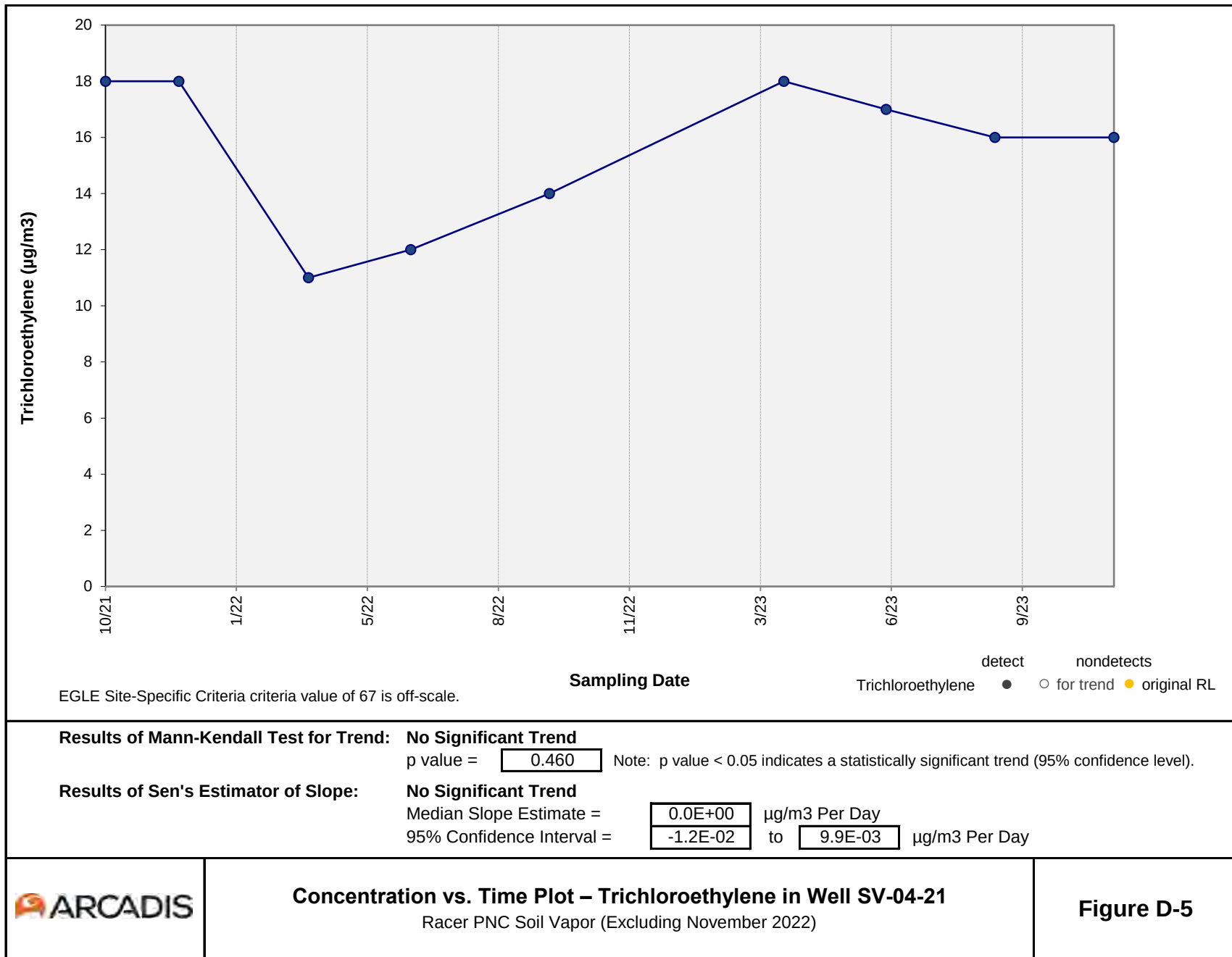


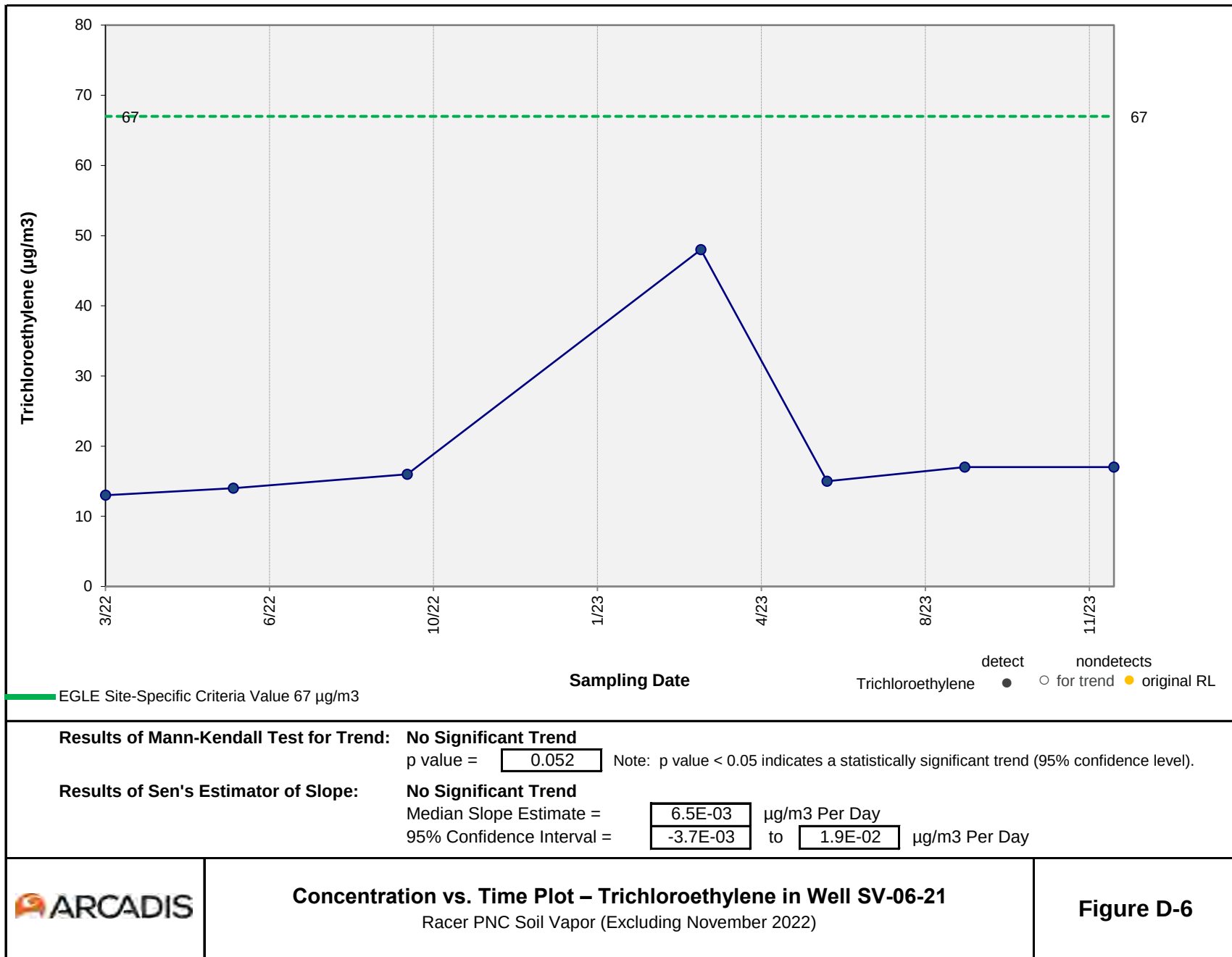
Concentration vs. Time Plot – Trichloroethylene in Well SV-01-21
 Racer PNC Soil Vapor (Excluding November 2022)

Figure D-2

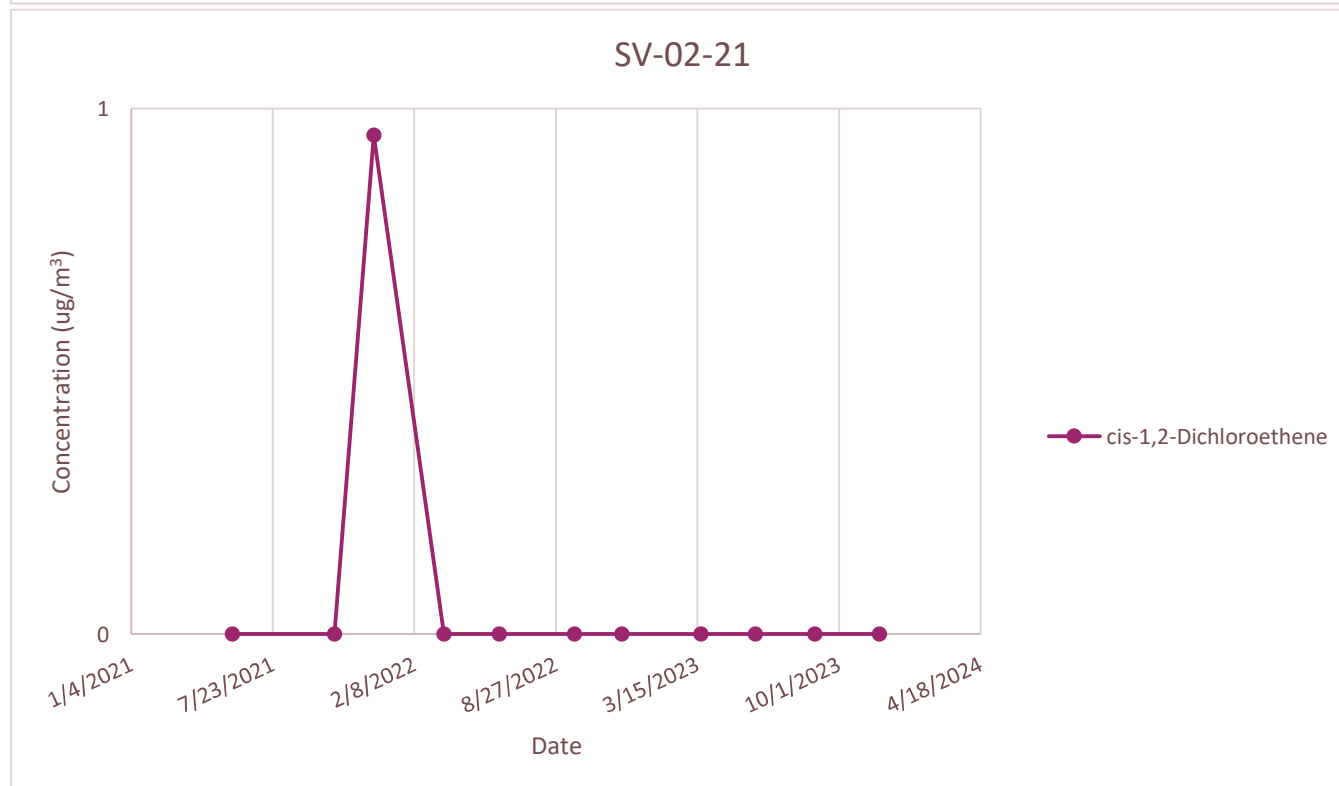
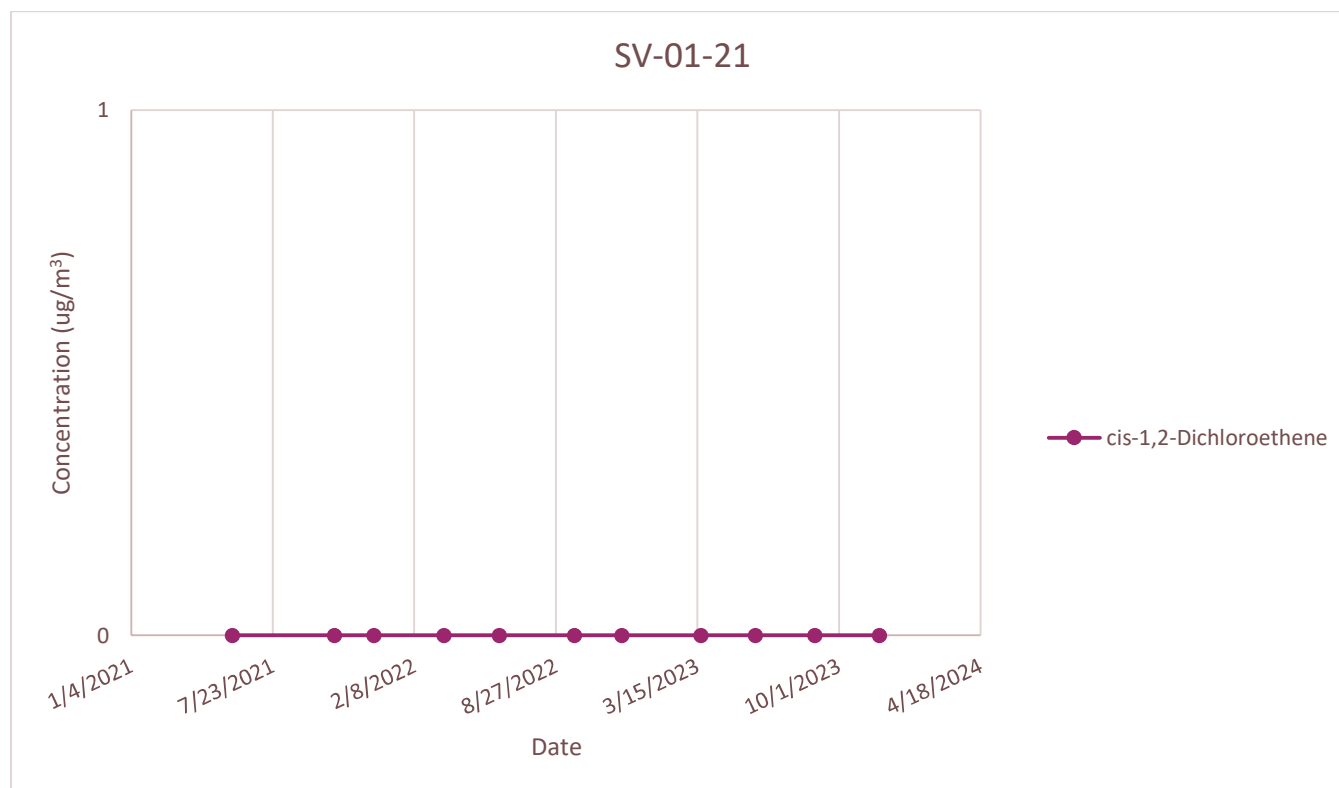




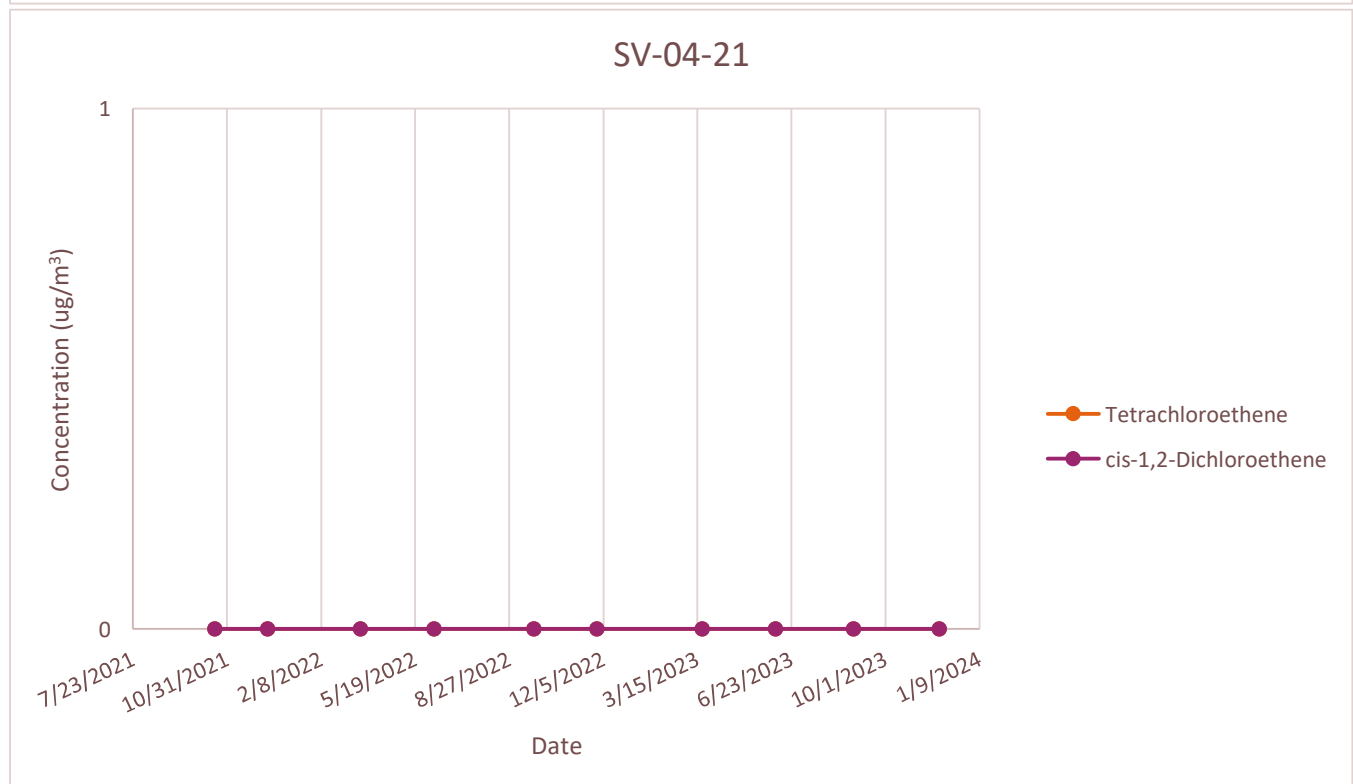
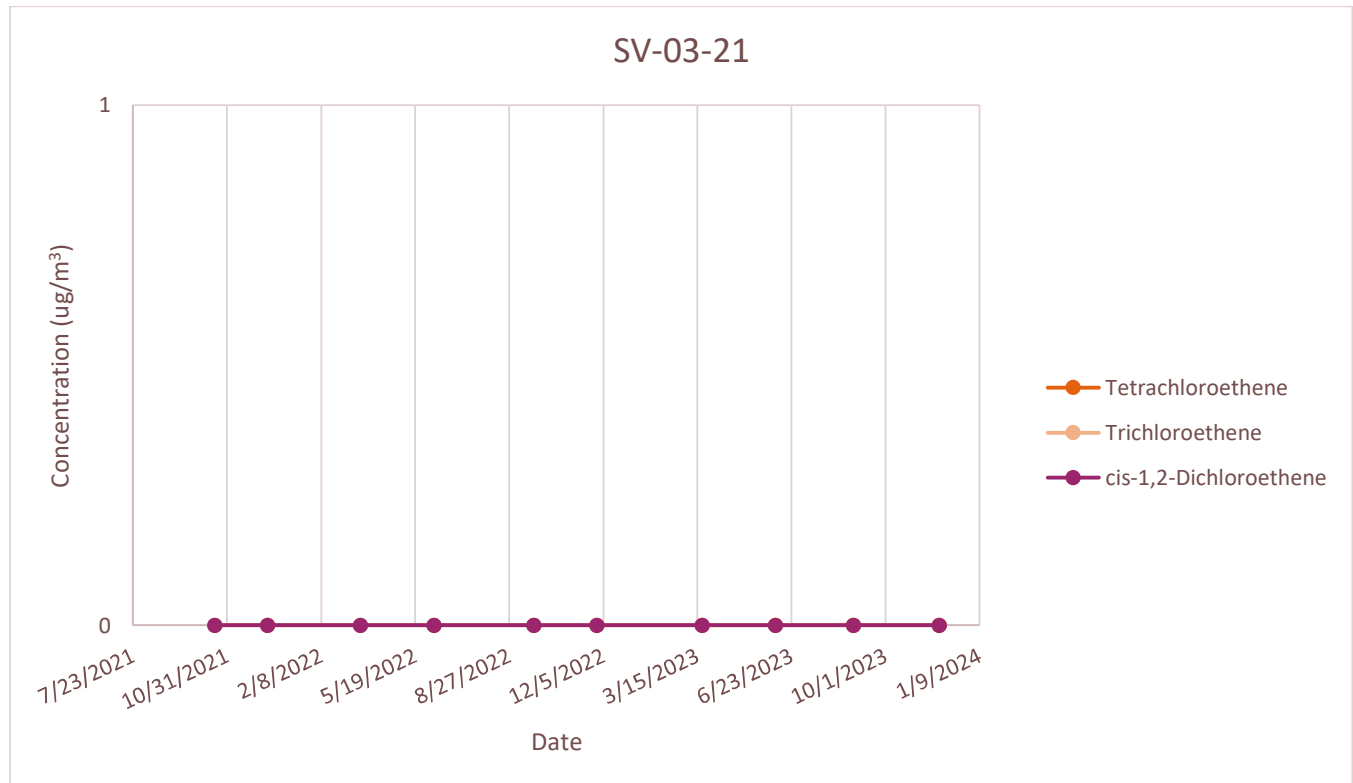




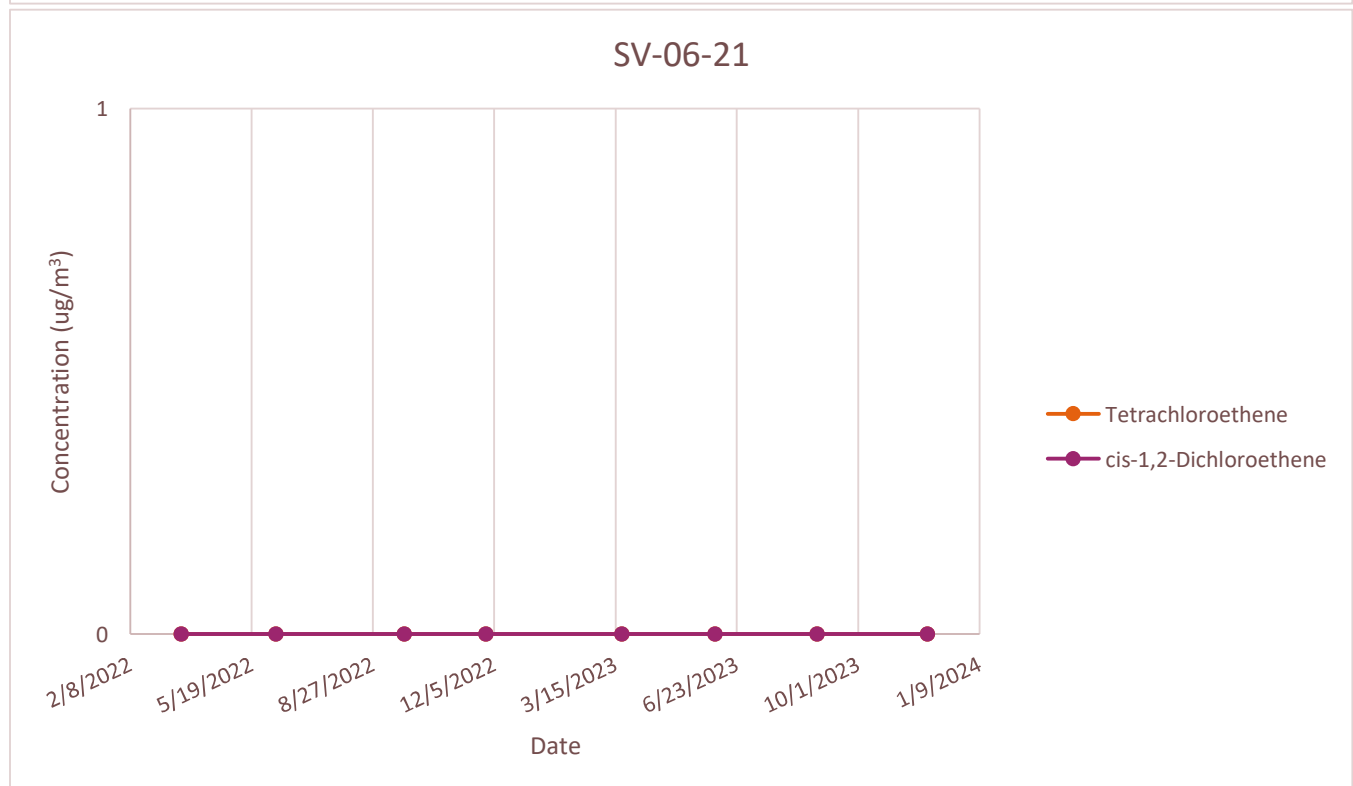
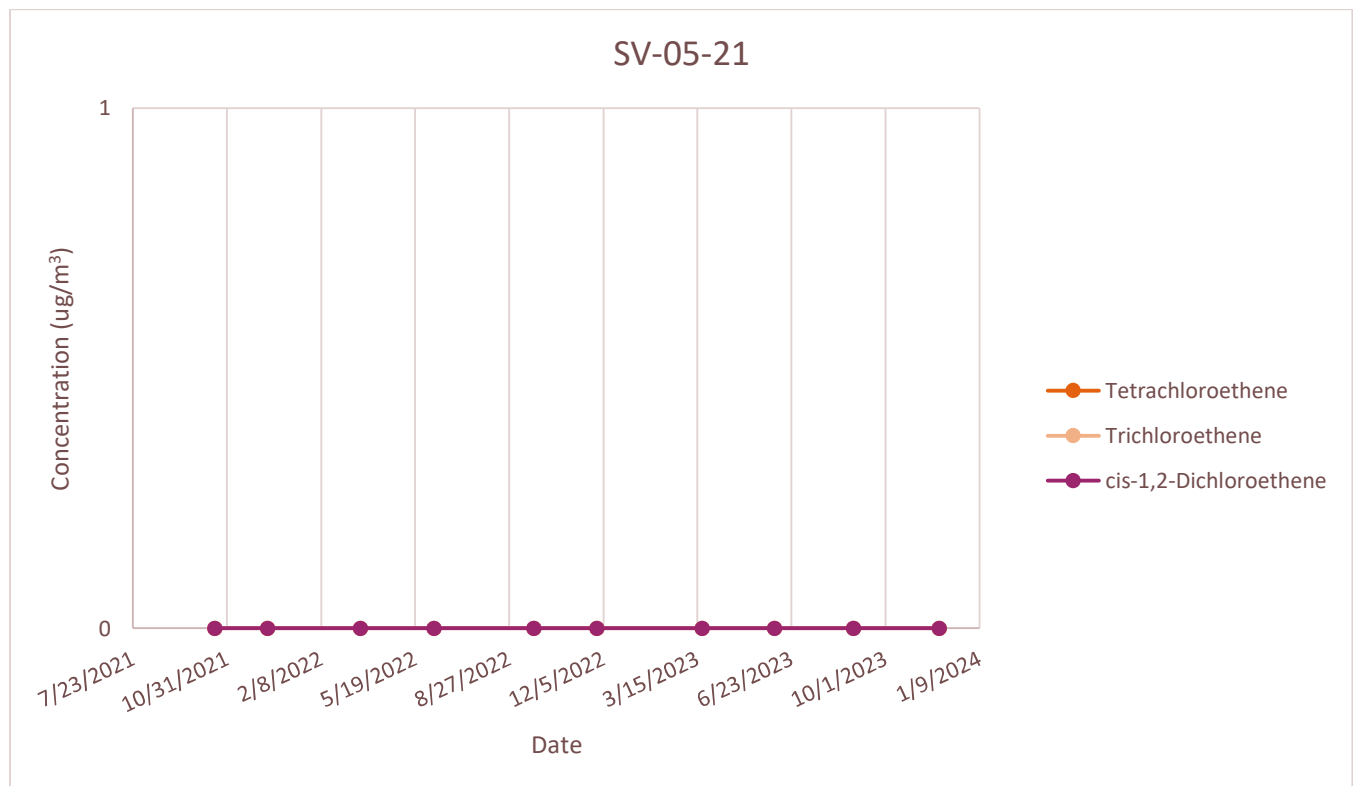
Soil Vapor Trend Graphs



Soil Vapor Trend Graphs



Soil Vapor Trend Graphs



Appendix E

2024 Fiero Temporary Monitoring Plan

Table 1
Fiero Temporary Groundwater Monitoring Plan Summary
July 2024
RACER Trust Pontiac North, Pontiac, Michigan



Well	Gauging	VOCs	Primary Function
MW-02-17	SA	SA	SW perimeter well to monitor for downgradient migration of CVOC impacts
MW-05-18	SA	SA	SW perimeter well to monitor for downgradient migration of CVOC impacts
MW-06-20	SA	SA	SW perimeter well to monitor for downgradient migration of CVOC impacts
MW-07-20	SA	SA	SW perimeter well to monitor for downgradient migration of CVOC impacts
MW-08-21	SA	SA	SW perimeter well to monitor for downgradient migration of CVOC impacts
MW-09-22	SA	SA	Monitoring well to monitor the concentration and stability of the CVOC plume core
MW-11-22	SA	SA	SW perimeter well to monitor for downgradient migration of CVOC impacts
MW-13-22	NM	NM	Not monitored, no longer need performance monitoring of the ZVI barrier
MW-14-22	NM	NM	Not monitored, no longer need performance monitoring of the ZVI barrier
MW-15-22	NM	NM	Not monitored, no longer need performance monitoring of the ZVI barrier
MW-16-22	SA	SA	Monitoring well to monitor the concentration and stability of the CVOC plume core
MWF12-01R	SA	NM	Gauging only to assist with GW elevation contour
MWF12-02R	SA	NM	Gauging only to assist with GW elevation contour
MWF15-01	SA	SA	Monitoring well to monitor area of historic elevated soil concentrations
MWF16-05	SA	SA	Monitoring well to monitor the concentration and stability of the CVOC plume core
MWF16-06	SA	SA	Monitoring well to monitor the concentration and stability of the CVOC plume source area
MWF16-07	SA	SA	Delineation well to monitor and define the southern plume boundary
MWF16-12	SA	SA	Delineation well to monitor and define the upgradient plume boundary
MWF16-15	SA	SA	Delineation well to monitor and define the plume boundary
MWF16-16	SA	SA	Monitoring well to monitor the concentration and stability of the CVOC plume core

Table 1
Fiero Temporary Groundwater Monitoring Plan Summary
July 2024
RACER Trust Pontiac North, Pontiac, Michigan



Well	Gauging	VOCs	Primary Function
MWF16-17	SA	SA	Delineation well to monitor and define the plume northern boundary
MWF16-18	SA	SA	Monitoring well to monitor the concentration and stability of the CVOC plume core
MWF16-19	NM	NM	Well damaged as part of new construction. To be properly abandoned. Plume boundary well understood.
MWF16-20	NM	NM	Well damaged as part of new construction. To be properly abandoned. Plume boundary well understood.
MWF16-22	SA	SA	Monitoring well to monitor the concentration and stability of the CVOC plume core
MWF16-23	SA	SA	SW perimeter well to monitor for downgradient migration of CVOC impacts
MWF16-24	SA	NM	Gauging only to assist with GW elevation contour
MWF16-25	SA	SA	Perimeter well to monitor for migration of CVOC impacts
MWF16-26	SA	SA	Perimeter well to monitor for migration of CVOC impacts
MWF2	SA	NM	Gauging only to assist with GW elevation contour
MWF7-02	SA	SA	Monitoring well to monitor the concentration and migration of the CVOC plume core
MWF7-03	SA	NM	Gauging only to assist with GW elevation contour
MWF8-01	SA	NM	Gauging only to assist with GW elevation contour
MWOS-08	SA	SA	Offsite well to monitor for downgradient migration of CVOC impacts
MWOS-09R	SA	SA	Offsite well to monitor for downgradient migration of CVOC impacts
MWOS-10	Q	Q	Offsite well to monitor for downgradient migration of CVOC impacts
PZF17-02	SA	NM	Gauging only to assist with GW elevation contour
PZF17-04	SA	NM	Gauging only to assist with GW elevation contour
PZF17-05	SA	NM	Gauging only to assist with GW elevation contour
TW-12-22	SA	SA	Monitoring well to monitor the concentration and migration of the CVOC plume core
Unknown-01	SA	SA	Delineation well to monitor and define the plume boundary
SV-01-21	NM	SA	SW perimeter - soil vapor monitoring
SV-02-21	NM	SA	SW perimeter - soil vapor monitoring

Table 1
Fiero Temporary Groundwater Monitoring Plan Summary
July 2024
RACER Trust Pontiac North, Pontiac, Michigan



Well	Gauging	VOCs	Primary Function
SV-03-21	NM	SA	SW perimeter - soil vapor monitoring
SV-04-21	NM	SA	SW perimeter - soil vapor monitoring
SV-05-21	NM	SA	SW perimeter - soil vapor monitoring
SV-06-21	NM	SA	SW perimeter - soil vapor monitoring

Notes:

SV locations will be monitored for soil vapor only

Semi-annual wells will alternate monitoring between first quarter (1Q) and third quarter (3Q)

Q = Quarterly

SA = Semi-annual (1Q and 3Q)

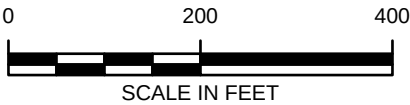
NM = Not Monitored

CITY: NOVI DIV: ENV DB: TRY PIC: S.INSALACO PM: T. LINDER TM: L. CRISP TR: PROJECT NUMBER: 30075936.0005 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
D:\GIS\Project Files\MotorsLiquidationCompany\PontiacNorthCampusDocuments\Former Fiero Property SiteInvestigation_2024\MonitoringPlan_2024.aprx PLOTTED: 7/2/2024 6:25 PM BY: T.Yarborough

Service Layer Credits: Tiled service layer © OpenStreetMap (and) contributors, CC-BY-SA
Google Earth Pro Aerial Dated: March 10, 2021



- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ SOIL VAPOR MONITORING POINT
 - ▲ PROPOSED SOIL VAPOR MONITORING POINT
 - SEMI-ANNUAL GAUGING ONLY
 - SEMI-ANNUAL GW SAMPLING
 - QUARTERLY GW SAMPLING
 - NOT MONITORED
 - ▭ CURRENT OR FORMER RACER PROPERTY



RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

2024 TEMPORARY MONITORING
PLAN LOCATIONS



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