



2022 Fiero Temporary Groundwater Monitoring Plan Summary

Pontiac North Campus

April 2023

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April 21, 2023

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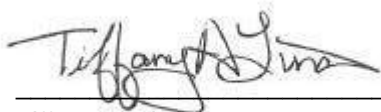
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Acronyms and Abbreviations

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 2022 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 (Arcadis 2022). The FTMP was submitted to the United States Environmental Protection Agency (USEPA) on February 23, 2022. The FTMP was approved by USEPA via email transmittal on February 24, 2022.

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 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 ship 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 Residential Site-Specific Volatilization to Indoor Air Criteria (SSVIAC).

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. Apparent groundwater flow is to the south and southwest.

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 2022 FTMP, a monitoring event was completed each quarter in 2022. A summary of each event follows:

- Quarter 1 (Q1) – On March 21st, 2022, Arcadis began monitoring activities by gauging Site monitoring wells. Following the gauging event SVMPs and monitoring wells were sampled for site-specific volatile organic compounds (VOCs) over a 5-day period.
- Quarter 2 (Q2) – On May 31st, 2022, Arcadis began monitoring activities by gauging Site monitoring wells. Following the gauging event, SVMPs and monitoring wells were sampled for site-specific VOCs over a 3-day period. In addition, samples from twelve monitoring well locations were analyzed for geochemical parameters (Iron, sulfate, total organic carbon [TOC]) and dissolved gases (ethene, ethane, methane) to establish aquifer geochemical conditions.
- Quarter 3 (Q3) – On September 19th, 2022, Arcadis began monitoring activities by gauging Site monitoring wells. Following the gauging event, SVMPs and monitoring wells were sampled for site-specific VOCs over a 4-day period.
- Quarter 4 (Q4) – On November 28th, 2022, Arcadis began monitoring activities by gauging Site monitoring wells. Following the gauging event, SVMPs and monitoring wells were sampled for site-specific VOCs over a 5-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** – Summary of Groundwater Elevations
- **Table 2** – Summary of Monitoring Well Analytical Results
- **Table 3** – Summary of Geochemical Analytical Results
- **Table 4** – Summary of SVMP 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 2022.

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 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**.

Groundwater samples were collected and submitted to Merit for analysis of site-specific VOCs using USEPA Method 8260C. Select groundwater samples were also analyzed for additional parameters including total and dissolved iron utilizing standard method E200.8, sulfate utilizing standard method E300.0, dissolved gases utilizing standard method RSK175, and total organic carbon utilizing standard method 5310C.

Due to factors such as accessibility and recovery, the following deviations from the planned sampling protocol occurred during the 2022 FTMP implementation:

- MWF16-01 – Destroyed during construction activities
- MWF16-05 – Covered by construction materials and could not be gauged Q1
- MWF16-09 – Damaged during construction activities and was not gauged Q1-Q4
- MWF16-10 – Destroyed during construction activities
- MWF16-11 – Destroyed during construction activities
- MWF16-19 – Covered by large debris pile and could not be gauged Q2-Q4
- MWF16-20 – Covered by large debris pile and could not be gauged Q1-Q2

2.3 Soil Vapor Sample Collection

Soil vapor monitoring was completed at the six SVMP locations (SV-01-20 through SV-06-21) as part of the 2022 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 2022 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** through **2D**). A summary of groundwater elevations collected during the 2022 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, MWF16-12, MWF16-19, and MWF16-20), 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.

3.2 Groundwater Analytical Results

Over the four quarters of sampling, 103 groundwater samples were collected and analyzed for VOCs. Groundwater data were compared to the 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 SSVIAC is provided as **Appendix C**. A summary of the groundwater analytical results is provided on **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 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 residential SSVIAC in groundwater, but are not as extensive as PCE, TCE, and cis-1,2-DCE, include: 1,1-dichloroethane (1,1-DCA), carbon tetrachloride, chloroform, and ethylbenzene.
- 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.
- All off-site monitoring wells were below the Residential SSVIAC for all monitoring events, except for MWOS-10, which exceeded the Residential SSVIAC in groundwater for TCE (8.1 µg/L) during the Q2 event (**Figure 4**).

3.3 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 7**. Complete analytical results are provided in **Table 4**. The following summarizes the results of soil vapor results:

- The SVMPs have not exceeded the soil vapor Residential SSVIAC for VOCs in 2022.

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.

3.4 Geochemical Evaluation

In addition to collecting VOC data, select monitoring wells (MWF16-05, MWF16-06, MW-09-22, MWF16-18, MWF16-16, TW-12-22, MWF16-22, MW-13-22, MW-14-22, MWF16-23, MW-08-21, and MWOS-10) along the axis of the groundwater plume were sampled for geochemical parameters including iron, dissolved iron, sulfate, TOC, ethane, ethene, and methane during the second quarter event. The data was collected to evaluate if Site conditions were conducive to the natural biodegradation (i.e., reductive dechlorination) of the chlorinated VOC impacts. The geochemical data is summarized in **Table 3**. The conclusions from the data analysis include:

- Geochemical conditions are not strongly reducing due to elevated dissolved oxygen concentrations in the aquifer as evidenced by oxidation reduction potential values greater 0 millivolts (mV), the presence of oxidized forms of iron (i.e., total iron concentrations greater than dissolved iron concentrations) and methane concentrations generally below the laboratory detection limit.
- Low TOC concentrations (2.8 – 27.6 milligrams per liter [mg/L]) indicate that there is not sufficient carbon source within the impacted area to drive the redox reactions that could cause a shift in geochemical conditions from oxidizing to reducing.
- The generally absent detections of daughter products (i.e., cis-1,2-DCE and vinyl chloride) at locations with significant PCE and/or TCE concentrations suggest that anaerobic biodegradation via the step-wise reductive dechlorination pathway is not the predominant attenuation mechanism in Site groundwater.

3.5 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 residential SSVIAC, and coefficient of variation values were calculated. The Mann-Kendall trend analysis included data from 2017 through 2022, 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 submitted to USEPA. The methodology, preliminary results summary, figures, 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 in groundwater is primarily stable with one well indicating an increasing trend in MWF16-05 near a source area, and MWF16-16 indicating an increasing trend downgradient of the source areas. PCE is stable near the southwest property boundary and off-site with a decreasing trend near the southwest corner of the property. Stability analysis results for PCE in groundwater are summarized in **Figure 6A**.
- TCE in groundwater is stable at all on-site and off-site locations, except for MWOS-09R, located off-site, which has a decreasing trend and MW-06-20 located on-site, which has an increasing trend. Stability analysis results for TCE in groundwater are summarized in **Figure 6B**.
- Cis-1,2-DCE in groundwater is increasing in MWF16-18 near a source area, stable to increasing in MWF16-25 at the southwest property boundary, and stable to decreasing off-site. Stability analysis results for cis-1,2-DCE in groundwater are summarized in **Figure 6C**.

Most of the monitoring wells are considered stable, and concentrations are expected to remain consistent with previous sampling events. Based on the trend analysis, continued monitoring is recommended; however, the frequency of the monitoring at select monitoring well locations may be reduced. A revised Fiero Temporary Monitoring Plan for 2023 was submitted under a separate cover, dated April 4, 2023.

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 twenty 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 2022 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 2022 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, with the exception of fourth quarter soil vapor results. Higher reporting limits were observed for soil vapor results during the fourth quarter due to the presence of elevated concentrations of 2-propanol. The source of the 2-propanol is unknown, although Eurofins indicated this compound is commonly found in hand sanitizer. Hand sanitizer, or similar, was not used by Arcadis staff during the handling of these samples. However, it is possible that the samples were exposed to hand sanitizer, or similar, at other steps in the sample container transportation process. Future results will be reviewed to see if this situation occurs again.

4 Conclusions and Recommendations

The FTMP consisted of four quarters of monitoring in 2022. The objective of the FTMP was to collect data to further evaluate the potential for cVOC migration, as well as concentration trends for cVOCs in groundwater. Conclusions and recommendations from the 2022 FTMP are summarized below:

- There were no exceedances of non-residential SSVIAC in groundwater on-site.
- The only compound detected in groundwater off-site above the residential SSVIAC was TCE from monitoring well location MWOS-10 during the second quarter monitoring event. For all other events, off-site monitoring wells were below residential SSVIAC for TCE and all other VOCs in groundwater.
- Geochemical conditions are not strongly reducing due to elevated dissolved oxygen concentrations with as evidenced by the presence of oxidized forms of iron (i.e., total iron concentrations greater than dissolved iron concentrations), and methane concentrations generally below the laboratory detection limit.
- There were no exceedances of the soil gas residential SSVIAC at SVMP locations during the four quarters of sampling completed in 2022.
- Based on the trend analysis, concentrations in both on-site and off-site monitoring wells for PCE, TCE, and cis-DCE since 2017 are generally stable, and concentrations are expected to remain consistent with previous sampling events. A select few on-site locations including MWF16-05, MWF16-16, MWF16-18, and MWF16-25 exhibit increasing trends for one or more cVOCs.

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. The FTMP for 2023 was submitted to USEPA under separate cover on April 4, 2023.

5 References

- 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.
- 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
2022 Groundwater Elevation Summary
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus



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	29.68	3/21/2022	25.43	947.09	5/31/2022	25.39	947.13	9/19/2022	25.92	946.60	11/28/2022	26.21	946.31
MW-05-18	976.03	975.21	33.58	3/21/2022	26.75	948.46	5/31/2022	26.70	948.51	9/19/2022	27.21	948.00	11/28/2022	27.58	947.63
MW-06-20	975.54	974.97	29.22	3/21/2022	25.55	949.42	5/31/2022	25.52	949.45	9/20/2022	25.94	949.03	11/28/2022	26.42	948.55
MW-07-20	975.48	975.06	30.19	3/21/2022	26.15	948.91	5/31/2022	26.12	948.94	9/19/2022	26.61	948.45	11/28/2022	27.00	948.06
MW-08-21	976.04	975.50	30.25	3/21/2022	26.32	949.18	5/31/2022	26.28	949.22	9/19/2022	26.72	948.78	11/28/2022	27.18	948.32
MW-13-22	973.17	972.62	26.74	3/21/2022	21.59	951.03	5/31/2022	21.63	950.99	9/19/2022	22.06	950.56	11/28/2022	22.62	950.00
MW-14-22	973.21	972.71	34.66	3/21/2022	22.00	950.71	5/31/2022	21.95	950.76	9/19/2022	22.41	950.30	11/28/2022	22.91	949.80
MW-15-22	972.97	972.66	35.95	NA	NA	NA	NA	NA	NA	NA	NA	NA	11/28/2022	23.03	949.63
MW-16-22	972.84	972.50	30.51	NA	NA	NA	NA	NA	NA	NA	NA	NA	11/28/2022	22.97	949.53
MWF7-02	NA	970.58	22.85	3/21/2022	19.10	951.48	5/31/2022	18.99	951.59	9/19/2022	21.65	948.93	11/28/2022	20.29	950.29
MWF7-03	973.63	973.31	32.51	3/21/2022	21.00	952.31	5/31/2022	20.95	952.36	9/19/2022	21.51	951.80	11/28/2022	22.07	951.24
MWF12-01R	964.97	967.99	23.24	3/21/2022	19.97	948.02	5/31/2022	19.92	948.07	9/19/2022	20.51	947.48	11/28/2022	20.81	947.18
MWF12-02R	962.38	961.91	22.50	3/21/2022	13.08	948.83	5/31/2022	13.06	948.85	9/19/2022	12.72	949.19	11/28/2022	14.05	947.86
MWF15-01	NA	969.35	28.80	3/21/2022	18.32	951.03	5/31/2022	18.25	951.10	9/23/2022	18.91	950.44	11/28/2022	19.40	949.95
MWF16-07	973.36	972.65	17.46	3/21/2022	5.18	967.47	5/31/2022	4.61	968.04	9/30/2022	5.90	966.75	11/28/2022	6.61	966.04
MWF16-15	973.30	972.71	35.50	3/21/2022	21.50	951.21	5/31/2022	21.45	951.26	9/19/2022	21.96	950.75	11/28/2022	22.46	950.25
MWF16-23	973.82	973.39	30.46	3/21/2022	23.51	949.88	5/31/2022	23.47	949.92	9/19/2022	23.89	949.50	11/28/2022	24.36	949.03
Unknown-01	969.51	969.16	24.05	3/21/2022	18.15	951.01	5/31/2022	18.08	951.08	9/19/2022	18.63	950.53	11/28/2022	19.15	950.01
Former Fiero Assembly															
MW-09-22	973.83	973.46	32.85	3/21/2022	20.57	952.89	5/31/2022	20.49	952.97	9/19/2022	20.98	952.48	11/28/2022	21.57	951.89
MW-11-22	977.42	976.75	34.70	3/21/2022	27.07	949.68	5/31/2022	27.00	949.75	9/19/2022	27.48	949.27	11/28/2022	27.95	948.80
MWF8-01	973.41	972.94	27.20	NM	NM	NM	NM	NM	NM	9/19/2022	18.28	954.66	11/28/2022	18.75	954.19
MWF16-01	973.66	973.22	23.12	3/21/2022	15.00	958.22	5/31/2022	15.05	958.17	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
MWF16-05	973.95	973.68	22.73	Buried	Buried	Buried	5/31/2022	19.83	953.85	9/22/2022	20.50	953.18	11/28/2022	20.92	952.76
MWF16-06	974.02	973.77	28.65	3/21/2022	13.68	960.09	5/31/2022	14.18	959.59	9/19/2022	14.26	959.51	11/28/2022	15.86	957.91
MWF16-09	973.50	973.16	Damaged	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MWF16-12	973.60	973.20	18.90	3/21/2022	13.69	959.51	5/31/2022	13.58	959.62	9/19/2022	13.95	959.25	11/28/2022	14.80	958.40
MWF16-16	973.50	973.22	31.26	3/21/2022	22.08	951.14	5/31/2022	21.99	951.23	9/19/2022	22.48	950.74	12/5/2022	23.02	950.20
MWF16-17	973.70	973.32	31.80	3/21/2022	19.45	953.87	5/31/2022	19.41	953.91	9/21/2022	19.79	953.53	11/28/2022	20.45	952.87
MWF16-18	973.60	973.22	31.95	3/21/2022	20.42	952.80	5/31/2022	20.35	952.87	9/19/2022	20.86	952.36	11/28/2022	21.46	951.76
MWF16-19	973.60	973.19	26.80	3/21/2022	11.92	961.27	Buried	Buried	Buried	Buried	Buried	Buried	Buried	Buried	Buried
MWF16-20	973.55	973.32	24.57	Buried	Buried	Buried	Buried	Buried	Buried	9/21/2022	14.69	958.63	11/28/2022	15.75	957.57
MWF16-22	973.50	973.18	33.91	3/21/2022	22.89	950.29	5/31/2022	22.79	950.39	9/19/2022	23.31	949.87	11/28/2022	23.73	949.45
MWF16-24	973.64	973.38	29.86	3/21/2022	22.60	950.78	5/31/2022	22.52	950.86	9/19/2022	23.00	950.38	12/5/2022	23.52	949.86
MWF16-25	NA	975.24	37.18	3/21/2022	25.56	949.68	5/31/2022	25.51	949.73	9/19/2022	25.93	949.31	11/28/2022	26.42	948.82
MWF16-26	NA	974.14	35.84	3/21/2022	23.99	950.15	5/31/2022	23.92	950.22	9/19/2022	24.36	949.78	11/28/2022	24.83	949.31
TW-12-22	973.52	973.39	32.68	3/21/2022	22.42	950.97	5/31/2022	22.31	951.08	9/22/2022	22.82	950.57	12/5/2022	23.33	950.06

Table 1
2022 Groundwater Elevation Summary
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus



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
Offsite															
MWOS-08	975.55	975.09	28.80	3/21/2022	25.55	949.54	5/31/2022	25.50	949.59	9/19/2022	25.93	949.16	11/28/2022	26.41	948.68
MWOS-09R	976.68	976.18	32.20	3/21/2022	26.80	949.38	5/31/2022	27.78	948.40	9/19/2022	27.20	948.98	11/28/2022	27.66	948.52
MWOS-10	977.01	976.55	32.75	3/21/2022	27.98	948.57	5/31/2022	27.95	948.60	9/19/2022	28.42	948.13	11/28/2022	28.85	947.70
Former Fiero Parking Lot															
PZF17-02	977.70	977.43	31.50	3/21/2022	23.35	954.08	5/31/2022	23.12	954.31	9/19/2022	23.65	953.78	11/28/2022	24.12	953.31
PZF17-04	972.90	972.47	28.87	3/21/2022	19.49	952.98	5/31/2022	19.25	953.22	9/19/2022	19.76	952.71	11/28/2022	20.25	952.22
PZF17-05	976.43	975.97	34.00	3/21/2022	25.45	950.52	5/31/2022	25.25	950.72	9/19/2022	25.92	950.05	11/28/2022	26.32	949.65

Abbreviations:

ft - feet
NA - Not Applicable
NM - Not Measured

Notes:

1. Several wells were under water or covered by objects when initial gauging took place. They were gauged at a later date when water had receded or objects removed.

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 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:		Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG		MW-02-17 03/22/22 MW-02-17_GW-032222	MW-02-17 05/31/22 MW-02-17-GW_053122	MW-02-17 09/22/22 MW-02-17_GW-092222	MW-02-17 11/29/22 MW-02-17_GW-112922	MW-05-18 03/22/22 MW-05-18_GW-032222	MW-05-18 05/31/22 MW-05-18-GW_053122	MW-05-18 09/20/22 MW-05-18_GW-092022	MW-05-18 11/29/22 MW-05-18_GW-112922
Volatile Organics												
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Benzene	34	18	1,100	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	ug/L	< 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	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	59	33	1,200	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 25 U [< 25 U]	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
Carbon Disulfide	2,200	1,200	46,000	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-11	300	160	6,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	71	38	1,400	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	ug/L	< 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	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	19	10	610	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloromethane	340	200	7,400	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Cyclohexane	2,600	1,400	53,000	ug/L	< 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	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	ug/L	< 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	ug/L	< 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	ug/L	< 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	ug/L	< 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	ug/L	2 [2]	2	2	3	4	5	5	3
1,2-Dichloroethane	50	27	1,600	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	410	220	8,300	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	110	62	2,300	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	7	8	11	8
trans-1,2-Dichloroethene	480	260	9,800	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Dichloromethane	9,100	5,000	190,000	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	100	56	2,100	ug/L	< 1 U [< 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	< 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
Ethylbenzene	110	60	3,600	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropylbenzene	26	13	810	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methyl acetate	--	--	--	ug/L	< 10 U [< 10 U]	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methylcyclohexane	--	--	--	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Styrene	1,400	740	45,000	ug/L	< 1 U [< 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	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	ug/L	3 [4]	3	8	7	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	56,000	30,000	530,000	ug/L	< 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	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	2 [2]	< 1 U	6	8	5	< 1 U	7	7
1,1,2-Trichloroethane	21	11	410	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	15	8.1	210	ug/L	5 [5]	5	2	< 1 U	< 1 U	< 1 U	1	1
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl Chloride	2.2	1.2	260	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
m&p-Xylene	--	--	--	ug/L	< 2 U [< 2 U]	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
o-Xylene	--	--	--	ug/L	< 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	ug/L	< 2 U [< 2 U]	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

Table 2
Summary of 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:		Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG		MW-06-20 03/24/22 MW-06-20_GW-032422	MW-06-20 05/31/22 MW-06-20_GW-053122	MW-06-20 09/20/22 MW-06-20_GW-092022	MW-06-20 11/30/22 MW-06-20_GW-113022	MW-07-20 03/22/22 MW-07-20_GW-032222	MW-07-20 05/31/22 MW-07-20_GW-053122	MW-07-20 09/20/22 MW-07-20_GW-092022	MW-07-20 11/29/22 MW-07-20_GW-112922
Volatile Organics												
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 50 U	< 50 U	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U
Benzene	34	18	1,100	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	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	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	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 25 U	< 25 U	< 25 U [< 25 U]	< 25 U [< 25 U]	< 25 U	< 25 U	< 25 U	< 25 U
Carbon Disulfide	2,200	1,200	46,000	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	ug/L	< 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	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	2	1
CFC-12	71	38	1,400	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	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	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	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	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	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U
Cyclohexane	2,600	1,400	53,000	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	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	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	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	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	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	ug/L	5	7	6 [5]	7 [7]	7	8	7	7
1,2-Dichloroethane	50	27	1,600	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	410	220	8,300	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	110	62	2,300	ug/L	6	7	6 [6]	10 [10]	10	15	9	13
trans-1,2-Dichloroethene	480	260	9,800	ug/L	< 1 U	< 1 U	1 [1]	1 [1]	< 1 U	< 1 U	< 1 U	< 1 U
Dichloromethane	9,100	5,000	190,000	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	100	56	2,100	ug/L	< 1 U	< 1 U	< 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]	< 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
Ethylbenzene	110	60	3,600	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U
Isopropylbenzene	26	13	810	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U
Methyl acetate	--	--	--	ug/L	< 10 U	< 10 U	< 10 U [< 10 U]	< 10 U [< 10 U]	< 10 U	< 10 U	< 10 U	< 10 U
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 50 U	< 50 U	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U
Methylcyclohexane	--	--	--	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 50 U	< 50 U	< 50 U [< 50 U]	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U
Styrene	1,400	740	45,000	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	130	66	4,100	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	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	56,000	30,000	530,000	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	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	3	3	3 [3]	4 [4]	5	5	5	5
1,1,2-Trichloroethane	21	11	410	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	ug/L	8	9	9 [9]	12 [12]	2	3	2	2
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl Chloride	2.2	1.2	260	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 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
o-Xylene	--	--	--	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	ug/L	< 2 U	< 2 U	< 2 U [< 2 U]	< 2 U [< 2 U]	< 2 U	< 2 U	< 2 U	< 2 U

Table 2
Summary of 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:		Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	Units	MW-08-21 03/22/22 MW-08-21_GW-032222	MW-08-21 06/01/22 MW-08-21_GW_060122	MW-08-21 09/20/22 MW-08-21_GW-092022	MW-08-21 11/30/22 MW-08-21_GW-113022	MW-09-22 03/24/22 MW-09-22_GW-032422	MW-09-22 06/02/22 MW-09-22_GW-060222	MW-09-22 09/21/22 MW-09-22_GW-092122	MW-09-22 12/01/22 MW-09-22_GW-120122
Volatile Organics												
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 500 UY	< 50 U	< 50 U
Benzene	34	18	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
Bromoform	6,400	3,200	200,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
Bromomethane	59	33	1,200	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 5 U	< 5 U
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 250 UY	< 25 U	< 25 U
Carbon Disulfide	2,200	1,200	46,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	2	< 1 U
CFC-11	300	160	6,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
CFC-12	71	38	1,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 5 U	< 5 U
Chloroethane	15,000	8,600	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 5 U	< 5 U
Chloroform	19	10	610	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	1	< 10 UY	2	< 1 U
Chloromethane	340	200	7,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 5 U	< 5 U
Cyclohexane	2,600	1,400	53,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
1,2-Dichlorobenzene	19,000	9,900	160,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
1,3-Dichlorobenzene	130	70	2,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
1,4-Dichlorobenzene	310	160	9,800	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
1,1-Dichloroethane	160	88	5,300	ug/L	2	3	6	9	< 1 U	< 10 UY	< 1 U	< 1 U
1,2-Dichloroethane	50	27	1,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
1,1-Dichloroethene	410	220	8,300	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
cis-1,2-Dichloroethene	110	62	2,300	ug/L	< 1 U	3	5	12	1	< 10 UY	1	< 1 U
trans-1,2-Dichloroethene	480	260	9,800	ug/L	< 1 U	< 1 U	< 1 U	2	< 1 U	< 10 UY	< 1 U	< 1 U
Dichloromethane	9,100	5,000	190,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 5 U	< 5 U
1,2-Dichloropropane	100	56	2,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
cis-1,3-Dichloropropene	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
trans-1,3-Dichloropropene	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
Ethylbenzene	110	60	3,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
Isopropylbenzene	26	13	810	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
Methyl acetate	--	--	--	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 100 UY	< 10 U	< 10 U
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 500 UY	< 50 U	< 50 U
Methylcyclohexane	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 500 UY	< 50 U	< 50 U
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 5 U	< 5 U
Styrene	1,400	740	45,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	130	66	4,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	95	150 Y	195	48
Toluene	56,000	30,000	530,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
1,2,4-Trichlorobenzene	270	130	5,100	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY	< 5 U	< 5 U
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	3	< 1 U	3	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
1,1,2-Trichloroethane	21	11	410	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
Trichloroethene	15	8.1	210	ug/L	9	9	10	10	3	< 10 UY	4	1
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
Vinyl Chloride	2.2	1.2	260	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
m&p-Xylene	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 20 UY	< 2 U	< 2 U
o-Xylene	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY	< 1 U	< 1 U
Total Xylenes	3,000	1,600	60,000	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 20 UY	< 2 U	< 2 U

Table 2
Summary of 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:		Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	Units	MW-11-22 03/24/22 MW-11-22_GW-032422	MW-11-22 09/23/22 MW-11-22_GW092322	MW-13-22 03/23/22 MW-13-22_GW-032322	MW-13-22 06/01/22 MW-13-22-GW_060122	MW-13-22 09/21/22 MW-13-22_GW-092122	MW-13-22 11/28/22 MW-13-22_GW-112822	MW-14-22 03/23/22 MW-14-22_GW-032322	MW-14-22 06/01/22 MW-14-22-GW_060122
Volatile Organics												
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Benzene	34	18	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	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	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	59	33	1,200	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
Carbon Disulfide	2,200	1,200	46,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	ug/L	1	1	< 1 U	< 1 U	< 1 U	< 1 U	1	2
CFC-11	300	160	6,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	71	38	1,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	19	10	610	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloromethane	340	200	7,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Cyclohexane	2,600	1,400	53,000	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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	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	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	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	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	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	5	6
1,2-Dichloroethane	50	27	1,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	410	220	8,300	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	110	62	2,300	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	10	13
trans-1,2-Dichloroethene	480	260	9,800	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	2	2
Dichloromethane	9,100	5,000	190,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	100	56	2,100	ug/L	< 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	< 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
Ethylbenzene	110	60	3,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropylbenzene	26	13	810	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methyl acetate	--	--	--	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methylcyclohexane	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Styrene	1,400	740	45,000	ug/L	< 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	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	52	67
Toluene	56,000	30,000	530,000	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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	2	2	< 1 U	< 1 U	< 1 U	< 1 U	10	< 1 U
1,1,2-Trichloroethane	21	11	410	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	15	8.1	210	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	12	16
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl Chloride	2.2	1.2	260	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
m&p-Xylene	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
o-Xylene	--	--	--	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	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

Table 2
Summary of 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:		Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	Units	MW-14-22 09/21/22 MW-14-22_GW-092122	MW-14-22 11/28/22 MW-14-22_GW-112822	MW-15-22 11/29/22 MW-15-22_GW-112922	MW-16-22 11/29/22 MW-16-22_GW-112922	MWF12-01R 03/22/22 MWF12-01R_GW-032222	MWF12-01R 09/22/22 MWF12-01R_GW-092222	MWF12-02R 03/22/22 MWF12-02R_GW-032222	MWF12-02R 09/21/22 MWF12-02R_GW-092122
Volatile Organics												
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 50 U	< 50 U	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [< 50 U]
Benzene	34	18	1,100	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	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	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	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 25 U	< 25 U	< 25 U [< 25 U]	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U [< 25 U]
Carbon Disulfide	2,200	1,200	46,000	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	ug/L	2	2	< 1 U [< 1 U]	4	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
CFC-11	300	160	6,000	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	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	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	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	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	ug/L	< 1 U	1	< 1 U [< 1 U]	4	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Chloromethane	340	200	7,400	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Cyclohexane	2,600	1,400	53,000	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	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	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	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	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	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	ug/L	4	4	< 1 U [< 1 U]	12	5	< 1 U	< 1 U	< 1 U [< 1 U]
1,2-Dichloroethane	50	27	1,600	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,1-Dichloroethene	410	220	8,300	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	1	< 1 U	1	< 1 U	< 1 U [< 1 U]
cis-1,2-Dichloroethene	110	62	2,300	ug/L	12	14	< 1 U [< 1 U]	55	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
trans-1,2-Dichloroethene	480	260	9,800	ug/L	1	1	< 1 U [< 1 U]	4	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Dichloromethane	9,100	5,000	190,000	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
1,2-Dichloropropane	100	56	2,100	ug/L	< 1 U	< 1 U	< 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]	< 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]
Ethylbenzene	110	60	3,600	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Isopropylbenzene	26	13	810	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Methyl acetate	--	--	--	ug/L	< 10 U	< 10 U	< 10 U [< 10 U]	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U [< 10 U]
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 50 U	< 50 U	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [< 50 U]
Methylcyclohexane	--	--	--	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 50 U	< 50 U	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [< 50 U]
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Styrene	1,400	740	45,000	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,1,2,2-Tetrachloroethane	130	66	4,100	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	ug/L	89	98	< 1 U [< 1 U]	306 E	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Toluene	56,000	30,000	530,000	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	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	10	9	< 1 U [< 1 U]	10	36	47	< 1 U	< 1 U [< 1 U]
1,1,2-Trichloroethane	21	11	410	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	ug/L	19	18	< 1 U [< 1 U]	27	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Vinyl Chloride	2.2	1.2	260	ug/L	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 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]
o-Xylene	--	--	--	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	ug/L	< 2 U	< 2 U	< 2 U [< 2 U]	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U [< 2 U]

Table 2
Summary of 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:		Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	Units	MWF16-05 03/24/22 MWF16-05_GW-032422	MWF16-05 06/02/22 MWF16-05-GW_060222	MWF16-05 09/22/22 MWF16-05_GW-092222	MWF16-05 11/29/22 MWF16-05_GW-112922	MWF16-06 03/23/22 MWF16-06_GW-032322	MWF16-06 06/02/22 MWF16-06_GW-060222	MWF16-06 09/22/22 MWF16-06_GW-092222	MWF16-06 11/29/22 MWF16-06_GW-112922
Volatile Organics												
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 500 UY	< 1000 UY	< 1000 UY	< 1000 UY	< 50 U	< 50 U	< 50 U	< 50 U
Benzene	34	18	1,100	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	6,400	3,200	200,000	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	59	33	1,200	ug/L	< 50 UY	< 100 UY	< 100 UY	< 100 UY	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 250 UY	< 500 UY	< 500 UY	< 500 UY	< 25 U	< 25 U	< 25 U	< 25 U
Carbon Disulfide	2,200	1,200	46,000	ug/L	< 50 UY	< 100 UY	< 100 UY	< 100 UY	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	7	9	9	10
CFC-11	300	160	6,000	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	71	38	1,400	ug/L	< 50 UY	< 100 UY	< 100 UY	< 100 UY	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	ug/L	< 50 UY	< 100 UY	< 100 UY	< 100 UY	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15,000	8,600	320,000	ug/L	< 50 UY	< 100 UY	< 100 UY	< 100 UY	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	19	10	610	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	15	17	15	13
Chloromethane	340	200	7,400	ug/L	< 50 UY	< 100 UY	< 100 UY	< 100 UY	< 5 U	< 5 U	< 5 U	< 5 U
Cyclohexane	2,600	1,400	53,000	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	1	< 1 U
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	ug/L	< 50 UY	< 100 UY	< 100 UY	< 100 UY	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	19,000	9,900	160,000	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	130	70	2,700	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	310	160	9,800	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	160	88	5,300	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	72	133	95	61
1,2-Dichloroethane	50	27	1,600	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	1	2	2	1
1,1-Dichloroethene	410	220	8,300	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	8	12	10	8
cis-1,2-Dichloroethene	110	62	2,300	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	21	53	29	19
trans-1,2-Dichloroethene	480	260	9,800	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	1	< 1 U	< 1 U
Dichloromethane	9,100	5,000	190,000	ug/L	< 50 UY	< 100 UY	< 100 UY	< 100 UY	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	100	56	2,100	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,3-Dichloropropene	--	--	--	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,3-Dichloropropene	--	--	--	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene	110	60	3,600	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
Isopropylbenzene	26	13	810	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
Methyl acetate	--	--	--	ug/L	< 100 UY	< 200 UY	< 200 UY	< 200 UY	< 10 U	< 10 U	< 10 U	< 10 U
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 500 UY	< 1000 UY	< 1000 UY	< 1000 UY	< 50 U	< 50 U	< 50 U	< 50 U
Methylcyclohexane	--	--	--	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 500 UY	< 1000 UY	< 1000 UY	< 1000 UY	< 50 U	< 50 U	< 50 U	< 50 U
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 50 UY	< 100 UY	< 100 UY	< 100 UY	< 5 U	< 5 U	< 5 U	< 5 U
Styrene	1,400	740	45,000	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	130	66	4,100	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	ug/L	480 Y	420 Y	680 Y	730 Y	53	66	63	44
Toluene	56,000	30,000	530,000	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	270	130	5,100	ug/L	< 50 UY	< 100 UY	< 100 UY	< 100 UY	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	111	134	135	145
1,1,2-Trichloroethane	21	11	410	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	15	8.1	210	ug/L	20 Y	< 20 UY	30 Y	30 Y	7	10	9	8
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl Chloride	2.2	1.2	260	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
m&p-Xylene	--	--	--	ug/L	< 20 UY	< 40 UY	< 40 UY	< 40 UY	< 2 U	< 2 U	< 2 U	< 2 U
o-Xylene	--	--	--	ug/L	< 10 UY	< 20 UY	< 20 UY	< 20 UY	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes	3,000	1,600	60,000	ug/L	< 20 UY	< 40 UY	< 40 UY	< 40 UY	< 2 U	< 2 U	< 2 U	< 2 U

Table 2
Summary of 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID:					MWF16-07	MWF16-12	MWF16-12	MWF16-15	MWF16-15	MWF16-16	MWF16-16	MWF16-16
Date Collected:		Res Fiero	NR Fiero		09/30/22	03/24/22	09/21/22	03/23/22	09/21/22	03/23/22	06/02/22	09/22/22
Sample Name:	Res Fiero SSVIAC SOG	SSVIAC BASE	SSVIAC <50k SOG	Units	MWF16-07_GW-093022	MWF16-12_GW-032422	MWF16-12_GW-092122	MWF16-15_GW-032322	MWF16-15_GW-092122	MWF16-16_GW-032322	MWF16-16-GW_060222	MWF16-16_GW-092222
Volatile Organics												
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 500 UY [< 500 UY]	< 1000 UY [< 1000 UY]	< 1000 UY
Benzene	34	18	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Bromodichloromethane	60	31	1,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Bromoform	6,400	3,200	200,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Bromomethane	59	33	1,200	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 100 UY [< 100 UY]	< 100 UY
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 250 UY [< 250 UY]	< 500 UY [< 500 UY]	< 500 UY
Carbon Disulfide	2,200	1,200	46,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 100 UY [< 100 UY]	< 100 UY
Carbon Tetrachloride	14	7.2	440	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
CFC-11	300	160	6,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
CFC-12	71	38	1,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 100 UY [< 100 UY]	< 100 UY
Chlorobenzene	1,300	720	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Chlorodibromomethane	58	29	4,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 100 UY [< 100 UY]	< 100 UY
Chloroethane	15,000	8,600	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 100 UY [< 100 UY]	< 100 UY
Chloroform	19	10	610	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Chloromethane	340	200	7,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 100 UY [< 100 UY]	< 100 UY
Cyclohexane	2,600	1,400	53,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 100 UY [< 100 UY]	< 100 UY
1,2-Dibromoethane	8	4	250	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
1,2-Dichlorobenzene	19,000	9,900	160,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
1,3-Dichlorobenzene	130	70	2,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
1,4-Dichlorobenzene	310	160	9,800	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
1,1-Dichloroethane	160	88	5,300	ug/L	< 1 U	< 1 U	< 1 U	2	1	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
1,2-Dichloroethane	50	27	1,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
1,1-Dichloroethene	410	220	8,300	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
cis-1,2-Dichloroethene	110	62	2,300	ug/L	< 1 U	< 1 U	< 1 U	4	5	10 Y [10 Y]	20 Y [20 Y]	< 20 UY
trans-1,2-Dichloroethene	480	260	9,800	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Dichloromethane	9,100	5,000	190,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 100 UY [< 100 UY]	< 100 UY
1,2-Dichloropropane	100	56	2,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
cis-1,3-Dichloropropene	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
trans-1,3-Dichloropropene	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Ethylbenzene	110	60	3,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Isopropylbenzene	26	13	810	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Methyl acetate	--	--	--	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 100 UY [< 100 UY]	< 200 UY [< 200 UY]	< 200 UY
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 500 UY [< 500 UY]	< 1000 UY [< 1000 UY]	< 1000 UY
Methylcyclohexane	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 500 UY [< 500 UY]	< 1000 UY [< 1000 UY]	< 1000 UY
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 100 UY [< 100 UY]	< 100 UY
Styrene	1,400	740	45,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
1,1,2,2-Tetrachloroethane	130	66	4,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Tetrachloroethene	250	130	3,400	ug/L	< 1 U	36	50	< 1 U	< 1 U	470 Y [490 Y]	340 Y [330 Y]	380 Y
Toluene	56,000	30,000	530,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
1,2,4-Trichlorobenzene	270	130	5,100	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 100 UY [< 100 UY]	< 100 UY
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	< 1 U	< 1 U	< 1 U	9	11	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
1,1,2-Trichloroethane	21	11	410	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Trichloroethene	15	8.1	210	ug/L	< 1 U	< 1 U	< 1 U	3	3	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Vinyl Chloride	2.2	1.2	260	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
m&p-Xylene	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 20 UY [< 20 UY]	< 40 UY [< 40 UY]	< 40 UY
o-Xylene	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 20 UY [< 20 UY]	< 20 UY
Total Xylenes	3,000	1,600	60,000	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 20 UY [< 20 UY]	< 40 UY [< 40 UY]	< 40 UY

Table 2
Summary of 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:		Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	Units	MWF16-16 12/05/22 MWF16-16_GW-120522	MWF16-17 03/24/22 MWF16-17_GW-032422	MWF16-17 09/21/22 MWF16-17_GW-092122	MWF16-18 03/24/22 MWF16-18_GW-032422	MWF16-18 06/02/22 MWF16-18_GW-060222	MWF16-18 09/22/22 MWF16-18_GW-092222	MWF16-18 12/01/22 MWF16-18_GW-120122	MWF16-19 03/23/22 MWF16-19_GW-032322
Volatile Organics												
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 500 UY [< 500 UY]	< 500 UY [< 500 UY]	< 500 UY	< 500 UY	< 500 UY
Benzene	34	18	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Bromodichloromethane	60	31	1,700	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Bromoform	6,400	3,200	200,000	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Bromomethane	59	33	1,200	ug/L	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 50 UY [< 50 UY]	< 50 UY	< 50 UY	< 50 UY
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 250 UY [< 250 UY]	< 250 UY [< 250 UY]	< 250 UY	< 250 UY	< 250 UY
Carbon Disulfide	2,200	1,200	46,000	ug/L	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 50 UY [< 50 UY]	< 50 UY	< 50 UY	< 50 UY
Carbon Tetrachloride	14	7.2	440	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
CFC-11	300	160	6,000	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
CFC-12	71	38	1,400	ug/L	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 50 UY [< 50 UY]	< 50 UY	< 50 UY	< 50 UY
Chlorobenzene	1,300	720	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Chlorodibromomethane	58	29	4,400	ug/L	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 50 UY [< 50 UY]	< 50 UY	< 50 UY	< 50 UY
Chloroethane	15,000	8,600	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 50 UY [< 50 UY]	< 50 UY	< 50 UY	< 50 UY
Chloroform	19	10	610	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Chloromethane	340	200	7,400	ug/L	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 50 UY [< 50 UY]	< 50 UY	< 50 UY	< 50 UY
Cyclohexane	2,600	1,400	53,000	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
1,2-Dibromo-3-chloropropane	0.00045	0.00045	0.042	ug/L	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 50 UY [< 50 UY]	< 50 UY	< 50 UY	< 50 UY
1,2-Dibromoethane	8	4	250	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
1,2-Dichlorobenzene	19,000	9,900	160,000	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
1,3-Dichlorobenzene	130	70	2,700	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
1,4-Dichlorobenzene	310	160	9,800	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
1,1-Dichloroethane	160	88	5,300	ug/L	2	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	40 Y
1,2-Dichloroethane	50	27	1,600	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
1,1-Dichloroethene	410	220	8,300	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
cis-1,2-Dichloroethene	110	62	2,300	ug/L	2	< 1 U	< 1 U	70 Y [70 Y]	70 Y [80 Y]	100 Y	90 Y	< 10 UY
trans-1,2-Dichloroethene	480	260	9,800	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Dichloromethane	9,100	5,000	190,000	ug/L	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 50 UY [< 50 UY]	< 50 UY	< 50 UY	< 50 UY
1,2-Dichloropropane	100	56	2,100	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
cis-1,3-Dichloropropene	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
trans-1,3-Dichloropropene	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Ethylbenzene	110	60	3,600	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Isopropylbenzene	26	13	810	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Methyl acetate	--	--	--	ug/L	< 10 U	< 10 U	< 10 U	< 100 UY [< 100 UY]	< 100 UY [< 100 UY]	< 100 UY	< 100 UY	< 100 UY
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 50 U	< 50 U	< 50 U	< 500 UY [< 500 UY]	< 500 UY [< 500 UY]	< 500 UY	< 500 UY	< 500 UY
Methylcyclohexane	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 500 UY [< 500 UY]	< 500 UY [< 500 UY]	< 500 UY	< 500 UY	< 500 UY
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 50 UY [< 50 UY]	< 50 UY	< 50 UY	< 50 UY
Styrene	1,400	740	45,000	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
1,1,2,2-Tetrachloroethane	130	66	4,100	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Tetrachloroethene	250	130	3,400	ug/L	109	< 1 U	4	1150 Y [1180 Y]	930 Y [1090 Y]	1350 Y	1220 Y	< 10 UY
Toluene	56,000	30,000	530,000	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
1,2,4-Trichlorobenzene	270	130	5,100	ug/L	< 5 U	< 5 U	< 5 U	< 50 UY [< 50 UY]	< 50 UY [< 50 UY]	< 50 UY	< 50 UY	< 50 UY
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	4	1	4	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	230 Y
1,1,2-Trichloroethane	21	11	410	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Trichloroethene	15	8.1	210	ug/L	4	< 1 U	< 1 U	20 Y [20 Y]	20 Y [20 Y]	20 Y	20 Y	< 10 UY
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Vinyl Chloride	2.2	1.2	260	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
m&p-Xylene	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 20 UY [< 20 UY]	< 20 UY [< 20 UY]	< 20 UY	< 20 UY	< 20 UY
o-Xylene	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 10 UY [< 10 UY]	< 10 UY [< 10 UY]	< 10 UY	< 10 UY	< 10 UY
Total Xylenes	3,000	1,600	60,000	ug/L	< 2 U	< 2 U	< 2 U	< 20 UY [< 20 UY]	< 20 UY [< 20 UY]	< 20 UY	< 20 UY	< 20 UY

Table 2
Summary of 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:		Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	Units	MWF16-20 09/21/22 MWF16-20_GW-092122	MWF16-22 03/23/22 MWF16-22_GW-032322	MWF16-22 06/01/22 MWF16-22-GW_060122	MWF16-22 09/22/22 MWF16-22_GW-092222	MWF16-22 12/01/22 MWF16-22_GW-120122	MWF16-23 03/24/22 MWF16-23_GW-032422	MWF16-23 06/01/22 MWF16-23_GW_060122	MWF16-23 09/20/22 MWF16-23_GW-092022
Volatile Organics												
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [< 50 U]
Benzene	34	18	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Bromodichloromethane	60	31	1,700	ug/L	< 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	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Bromomethane	59	33	1,200	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U [< 25 U]
Carbon Disulfide	2,200	1,200	46,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Carbon Tetrachloride	14	7.2	440	ug/L	57	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
CFC-11	300	160	6,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
CFC-12	71	38	1,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Chlorobenzene	1,300	720	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Chlorodibromomethane	58	29	4,400	ug/L	< 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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Chloroform	19	10	610	ug/L	180	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Chloromethane	340	200	7,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Cyclohexane	2,600	1,400	53,000	ug/L	< 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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
1,2-Dibromoethane	8	4	250	ug/L	< 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	ug/L	< 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	ug/L	< 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	ug/L	< 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	ug/L	45	1	< 1 U	< 1 U	2	5	5	7 [7]
1,2-Dichloroethane	50	27	1,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,1-Dichloroethene	410	220	8,300	ug/L	9	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
cis-1,2-Dichloroethene	110	62	2,300	ug/L	2	10	6	7	10	5	5	12 [12]
trans-1,2-Dichloroethene	480	260	9,800	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	2	2 [2]
Dichloromethane	9,100	5,000	190,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
1,2-Dichloropropane	100	56	2,100	ug/L	< 1 U	< 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	< 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]
Ethylbenzene	110	60	3,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Isopropylbenzene	26	13	810	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Methyl acetate	--	--	--	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U [< 10 U]
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [< 50 U]
Methylcyclohexane	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U [< 50 U]
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Styrene	1,400	740	45,000	ug/L	< 1 U	< 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	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Tetrachloroethene	250	130	3,400	ug/L	11	76	69	76	78	< 1 U	< 1 U	< 1 U [< 1 U]
Toluene	56,000	30,000	530,000	ug/L	< 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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	120	2	< 1 U	2	2	8	< 1 U	13 [13]
1,1,2-Trichloroethane	21	11	410	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Trichloroethene	15	8.1	210	ug/L	6	2	2	2	2	13	16	17 [18]
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Vinyl Chloride	2.2	1.2	260	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
m&p-Xylene	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U [< 2 U]
o-Xylene	--	--	--	ug/L	< 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	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U [< 2 U]

Table 2
Summary of 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:					MWF16-23 11/30/22	MWF16-24 03/24/22	MWF16-24 09/22/22	MWF16-25 03/24/22	MWF16-25 06/01/22	MWF16-25 09/23/22	MWF16-25 11/30/22	MWF7-02 03/23/22
	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	Units	MWF16-23_GW-113022	MWF16-24_GW-032422	MWF16-24_GW-092222	MWF16-25_GW-032422	MWF16-25_GW-060122	MWF16-25_GW092322	MWF16-25_GW-113022	MWF7-02_GW-032322
Volatile Organics												
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Benzene	34	18	1,100	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	ug/L	< 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	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	59	33	1,200	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 25 U [< 25 U]	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
Carbon Disulfide	2,200	1,200	46,000	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-11	300	160	6,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	71	38	1,400	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	ug/L	< 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	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	19	10	610	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	4	3	3	3	1
Chloromethane	340	200	7,400	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Cyclohexane	2,600	1,400	53,000	ug/L	< 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	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	ug/L	< 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	ug/L	< 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	ug/L	< 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	ug/L	< 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	ug/L	7 [7]	< 1 U	< 1 U	5	5	4	4	12
1,2-Dichloroethane	50	27	1,600	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	410	220	8,300	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	13
cis-1,2-Dichloroethene	110	62	2,300	ug/L	11 [11]	< 1 U	< 1 U	27	35	38	43	2
trans-1,2-Dichloroethene	480	260	9,800	ug/L	1 [1]	< 1 U	< 1 U	2	2	3	3	< 1 U
Dichloromethane	9,100	5,000	190,000	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	100	56	2,100	ug/L	< 1 U [< 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	< 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
Ethylbenzene	110	60	3,600	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropylbenzene	26	13	810	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methyl acetate	--	--	--	ug/L	< 10 U [< 10 U]	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methylcyclohexane	--	--	--	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Styrene	1,400	740	45,000	ug/L	< 1 U [< 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	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	95
Toluene	56,000	30,000	530,000	ug/L	< 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	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	14 [13]	2	2	4	3	3	4	88
1,1,2-Trichloroethane	21	11	410	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	15	8.1	210	ug/L	17 [17]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	4
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl Chloride	2.2	1.2	260	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
m&p-Xylene	--	--	--	ug/L	< 2 U [< 2 U]	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
o-Xylene	--	--	--	ug/L	< 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	ug/L	< 2 U [< 2 U]	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

Table 2
Summary of 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:		Res Fiero	NR Fiero		MWF7-02	MWF7-02	MWF7-02	MWF7-03	MWF7-03	MWOS-08	MWOS-08	MWOS-08
	Res Fiero SSVIAC SOG	SSVIAC BASE	SSVIAC <50k SOG	Units	06/01/22	09/20/22	11/29/22	03/23/22	09/20/22	03/25/22	06/02/22	09/22/22
	MWF7-02_GW-060122	MWF7-02_GW-092022	MWF7-02_GW-112922	MWF7-03_GW-032322	MWF7-03_GW-092022	MWOS-08_GW-032522	MWOS-08-GW_060222	MWOS-08_GW-092222				
Volatile Organics												
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Benzene	34	18	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	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	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	59	33	1,200	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
Carbon Disulfide	2,200	1,200	46,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-11	300	160	6,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	71	38	1,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	19	10	610	ug/L	< 1 U	1	1	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloromethane	340	200	7,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Cyclohexane	2,600	1,400	53,000	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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	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	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	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	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	ug/L	13	12	8	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane	50	27	1,600	ug/L	< 1 U	1	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	410	220	8,300	ug/L	11	15	13	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	110	62	2,300	ug/L	2	2	1	< 1 U	< 1 U	1	2	3
trans-1,2-Dichloroethene	480	260	9,800	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Dichloromethane	9,100	5,000	190,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	100	56	2,100	ug/L	< 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	< 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
Ethylbenzene	110	60	3,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropylbenzene	26	13	810	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methyl acetate	--	--	--	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methylcyclohexane	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Styrene	1,400	740	45,000	ug/L	< 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	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	ug/L	77	115	95	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	56,000	30,000	530,000	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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	76	115	100	< 1 U	< 1 U	4	< 1 U	4
1,1,2-Trichloroethane	21	11	410	ug/L	< 1 U	1	1	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	15	8.1	210	ug/L	3	5	4	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl Chloride	2.2	1.2	260	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
m&p-Xylene	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
o-Xylene	--	--	--	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	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

Table 2
Summary of 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:					MWOS-08 11/30/22	MWOS-09R 03/22/22	MWOS-09R 06/01/22	MWOS-09R 09/22/22	MWOS-09R 11/30/22	MWOS-10 03/22/22	MWOS-10 06/02/22	MWOS-10 09/22/22
	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	Units	MWOS-08_GW-113022	MWOS-09_GW-032222	MWOS-09R_GW-060122	MWOS-09R_GW-092222	MWOS-09R_GW-113022	MWOS-10_GW-032222	MWOS-10-GW_060222	MWOS-10_GW-092222
Volatile Organics												
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Benzene	34	18	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	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	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	59	33	1,200	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
Carbon Disulfide	2,200	1,200	46,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-11	300	160	6,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	71	38	1,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	19	10	610	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloromethane	340	200	7,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Cyclohexane	2,600	1,400	53,000	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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	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	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	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	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	ug/L	< 1 U	4	5	4	6	7	6	4
1,2-Dichloroethane	50	27	1,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	410	220	8,300	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	110	62	2,300	ug/L	4	28	28	22	25	6	7	4
trans-1,2-Dichloroethene	480	260	9,800	ug/L	< 1 U	2	2	2	2	< 1 U	< 1 U	< 1 U
Dichloromethane	9,100	5,000	190,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	100	56	2,100	ug/L	< 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	< 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
Ethylbenzene	110	60	3,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropylbenzene	26	13	810	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methyl acetate	--	--	--	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methylcyclohexane	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Styrene	1,400	740	45,000	ug/L	< 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	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	ug/L	< 1 U	10	13	15	13	< 1 U	< 1 U	< 1 U
Toluene	56,000	30,000	530,000	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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	4	3	3	3	3	4	< 1 U	4
1,1,2-Trichloroethane	21	11	410	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	15	8.1	210	ug/L	< 1 U	3	4	3	3	7	9	8
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl Chloride	2.2	1.2	260	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
m&p-Xylene	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
o-Xylene	--	--	--	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	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

Table 2
Summary of 2022 Groundwater Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:		Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	Units	MWOS-10 11/30/22 MWOS-10_GW-113022	TW-12-22 03/24/22 TW-12-22_GW-032422	TW-12-22 06/02/22 TW-12-22_GW-060222	TW-12-22 09/22/22 TW-12-22_GW-092222	TW-12-22 12/05/22 TW-12-22_GW-120522	Unknown-1 03/23/22 UNKNOWN-01_GW-032322	Unknown-1 09/20/22 UNKNOWN-01_GW-092022
Volatile Organics											
Acetone	32,000,000	18,000,000	240,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Benzene	34	18	1,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	60	31	1,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	6,400	3,200	200,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	59	33	1,200	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone	4,000,000	2,200,000	59,000,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
Carbon Disulfide	2,200	1,200	46,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon Tetrachloride	14	7.2	440	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-11	300	160	6,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	71	38	1,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	1,300	720	27,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	58	29	4,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	15,000	8,600	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform	19	10	610	ug/L	< 1 U	8	7	7	8	< 1 U	< 1 U
Chloromethane	340	200	7,400	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Cyclohexane	2,600	1,400	53,000	ug/L	< 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	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	8	4	250	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	19,000	9,900	160,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	130	70	2,700	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	310	160	9,800	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	160	88	5,300	ug/L	5	9	9	10	13	4	6
1,2-Dichloroethane	50	27	1,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	410	220	8,300	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	110	62	2,300	ug/L	4	67	85	57	51	< 1 U	< 1 U
trans-1,2-Dichloroethene	480	260	9,800	ug/L	< 1 U	3	3	3	3	< 1 U	< 1 U
Dichloromethane	9,100	5,000	190,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	100	56	2,100	ug/L	< 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	< 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
Ethylbenzene	110	60	3,600	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropylbenzene	26	13	810	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methyl acetate	--	--	--	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Methyl N-Butyl Ketone	24,000	12,000	490,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methylcyclohexane	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
4-Methyl-2-pentanone	1,600,000	810,000	19,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methyl tert-butyl ether	10,000	5,300	320,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Styrene	1,400	740	45,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	130	66	4,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	250	130	3,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	23	41
Toluene	56,000	30,000	530,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	270	130	5,100	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	22,000	11,000	210,000	ug/L	3	5	< 1 U	6	6	54	66
1,1,2-Trichloroethane	21	11	410	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	15	8.1	210	ug/L	7	6	7	6	5	< 1 U	< 1 U
1,1,2-trichloro-1,2,2-trifluoroethane	7,100	3,600	140,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl Chloride	2.2	1.2	260	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
m&p-Xylene	--	--	--	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
o-Xylene	--	--	--	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes	3,000	1,600	60,000	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

Table 2
Summary of Groundwater Analytical Results
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 denote exceedance and/or equal to Residential Site-Specific Volatilization to Indoor Air Criteria for Slab-on-grade and Basement Criteria.
- 3) Values in red type denote exceedance and/or equal to Non-Residential Site-Specific Volatilization to Indoor Air Criteria.
- 4) Duplicate analyses are presented in brackets.

Abbreviations:

µg/L	Micrograms per liter.
BASE	Basement scenario.
NR	Non-Residential
Res	Residential
SOG	Slab-On-Grade scenario
SSVIAC	Site-Specific Volatilization to Indoor Air Criteria
E	Concentration exceeds calibration range
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.
<	Not Detected
<50k	Less than 50,000 square feet

Table 3
Summary of 2022 Geochemical Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
Pontiac, Michigan



Location ID: Date Collected: Sample Name:		MW-08-21 06/01/22	MW-09-22 06/02/22	MW-13-22 06/01/22	MW-14-22 06/01/22	MWF16-05 06/02/22	MWF16-06 06/02/22	MWF16-16 06/02/22	MWF16-18 06/02/22	MWF16-22 06/01/22	MWF16-23 06/01/22	MW0S-10 06/02/22	TW-12-22 06/02/22
	Units	MW-08-21_GW_060122	MW-09-22-GW_060222	MW-13-22-GW_060122	MW-14-22-GW_060122	MWF16-05-GW_060222	MWF16-06_GW_060222	MWF16-16-GW_060222	MWF16-18_GW_060222	MWF16-22-GW_060122	MWF16-23_GW_060122	MW0S-10-GW_060222	TW-12-22_GW_060222
Geochemical (E200.8)													
Iron	mg/L	0.03	0.22	22.4	0.12	0.11	0.15	0.19	< 0.02 U	0.24	0.29	0.75	0.41
Iron (dissolved)	mg/L	< 0.02 U	0.02	22.5	0.04	< 0.02 U	< 0.02 U	0.02	< 0.02 U	0.03	< 0.02 U	0.08	0.40
Dissolved Gases (RSK175)													
Ethane	ug/L	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethene	ug/L	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Methane	ug/L	< 1.0 U	1.7	540	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
TOC (5310C)													
Total organic carbon (TOC)	mg/L	4.4	3.6	27.6	3.5	3.4	3.7	3.5	9.4	3.3	3.5	4.0	2.8
Miscellaneous (E300.0)													
Sulfate	mg/L	153	39	45	57	25	56	42	79	52	45	99	60

Abbreviations:
< = Not detected
mg/L = Milligrams per liter
ug/L = Micrograms per liter
U = Compound was analyzed for but not detected. The associated value is the compound quantitation limit.

Table 4
Summary of 2022 Soil Gas Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
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 3/22/2022	SV-01-21 14-14.5 6/8/2022	SV-01-21 14-14.5 9/22/2022	SV-01-21 14-14.5 11/28/2022	SV-02-21 23.25-23.75 3/22/2022	SV-02-21 23.25-23.75 6/8/2022	SV-02-21 23.25-23.75 9/22/2022	SV-02-21 23.25-23.75 11/28/2022	SV-03-21 11.5-12 3/22/2022	SV-03-21 11.5-12 6/8/2022	SV-03-21 11.5-12 9/22/2022	SV-03-21 11.5-12 11/28/2022
Analyte															
1,1-Dichloroethylene	7,000	7,000	ug/m ³	< 4.1 U	< 4.2 U	< 4.4 U	< 34 U	< 3.9 U (< 4.0 U)	< 4.3 U (< 4.3 U)	< 4.1 U (< 4.1 U)	< 16 U (< 16 U)	< 4.0 U	< 4.2 U	< 4.1 U	< 39 U
cis-1,2-Dichloroethylene	280	280	ug/m ³	< 4.1 U	< 4.2 U	< 4.4 U	< 34 U	< 3.9 U (< 4.0 U)	< 4.3 U (< 4.3 U)	< 4.1 U (< 4.1 U)	< 16 U (< 16 U)	< 4.0 U	< 4.2 U	< 4.1 U	< 39 U
trans-1,2-Dichloroethylene	2,800	2,800	ug/m ³	< 4.1 U	< 4.2 U	< 4.4 U	< 34 U	< 3.9 U (< 4.0 U)	< 4.3 U (< 4.3 U)	< 4.1 U (< 4.1 U)	< 16 U (< 16 U)	< 4.0 U	< 4.2 U	< 4.1 U	< 39 U
Tetrachloroethylene	1,400	1,400	ug/m ³	< 7.0 U	10	13	< 58 U	9.5 (9.6)	8.2 (12)	< 7.1 U (< 7.0 U)	< 27 U (< 27 U)	< 6.8 U	< 7.2 U	< 7.0 U	< 67 U
Trichloroethylene	67	67	ug/m ³	8.6	23	11	< 46 U	53 (53)	55 (57)	55 (56)	55 (60)	< 5.4 U	< 5.7 U	< 5.6 U	< 53 U
Vinyl Chloride	54	54	ug/m ³	< 2.6 U	< 2.7 U	< 2.8 U	< 22 U	< 2.5 U (< 2.6 U)	< 2.7 U (< 2.8 U)	< 2.7 U (< 2.6 U)	< 10 U (< 10 U)	< 2.6 U	< 2.7 U	< 2.6 U	< 25 U

Table 4
Summary of 2022 Soil Gas Analytical Results
2022 Fiero Temporary Groundwater Monitoring Plan Summary
RACER Trust Pontiac North Campus
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 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-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-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
Analyte															
1,1-Dichloroethylene	7,000	7,000	ug/m ³	< 3.8 U	< 4.5 U	< 4.2 U	< 32 U	< 4.1 U	< 4.2 U	< 4.4 U	< 32 U	< 4.0 U	< 4.3 U	< 3.9 U	< 32 U
cis-1,2-Dichloroethylene	280	280	ug/m ³	< 3.8 U	< 4.5 U	< 4.2 U	< 32 U	< 4.1 U	< 4.2 U	< 4.4 U	< 32 U	< 4.0 U	< 4.3 U	< 3.9 U	< 32 U
trans-1,2-Dichloroethylene	2,800	2,800	ug/m ³	< 3.8 U	< 4.5 U	< 4.2 U	< 32 U	< 4.1 U	< 4.2 U	< 4.4 U	< 32 U	< 4.0 U	< 4.3 U	< 3.9 U	< 32 U
Tetrachloroethylene	1,400	1,400	ug/m ³	< 6.6 U	< 7.6 U	< 7.2 U	< 56 U	< 7.0 U	< 7.1 U	< 7.5 U	< 55 U	< 6.8 U	< 7.4 U	< 6.7 U	< 55 U
Trichloroethylene	67	67	ug/m ³	11	12	14	< 44 U	< 5.5 U	< 5.6 U	< 5.9 U	< 43 U	13	14	16	< 43 U
Vinyl Chloride	54	54	ug/m ³	< 2.5 U	< 2.9 U	< 2.7 U	< 21 U	< 2.6 U	< 2.7 U	< 2.8 U	< 20 U	< 2.6 U	< 2.8 U	< 2.5 U	< 20 U

Table 4
Summary of 2022 Soil Gas Analytical Results
2022 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 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
- 5) Reporting limits for samples collected on 11/28/22 were elevated from lab dilutions performed due to the presence of high level 2-propanol

Abbreviations:

$\mu\text{g}/\text{m}^3$ - Micrograms per cubic meter.

< - Not detected

ft. bgs - feet below ground surface

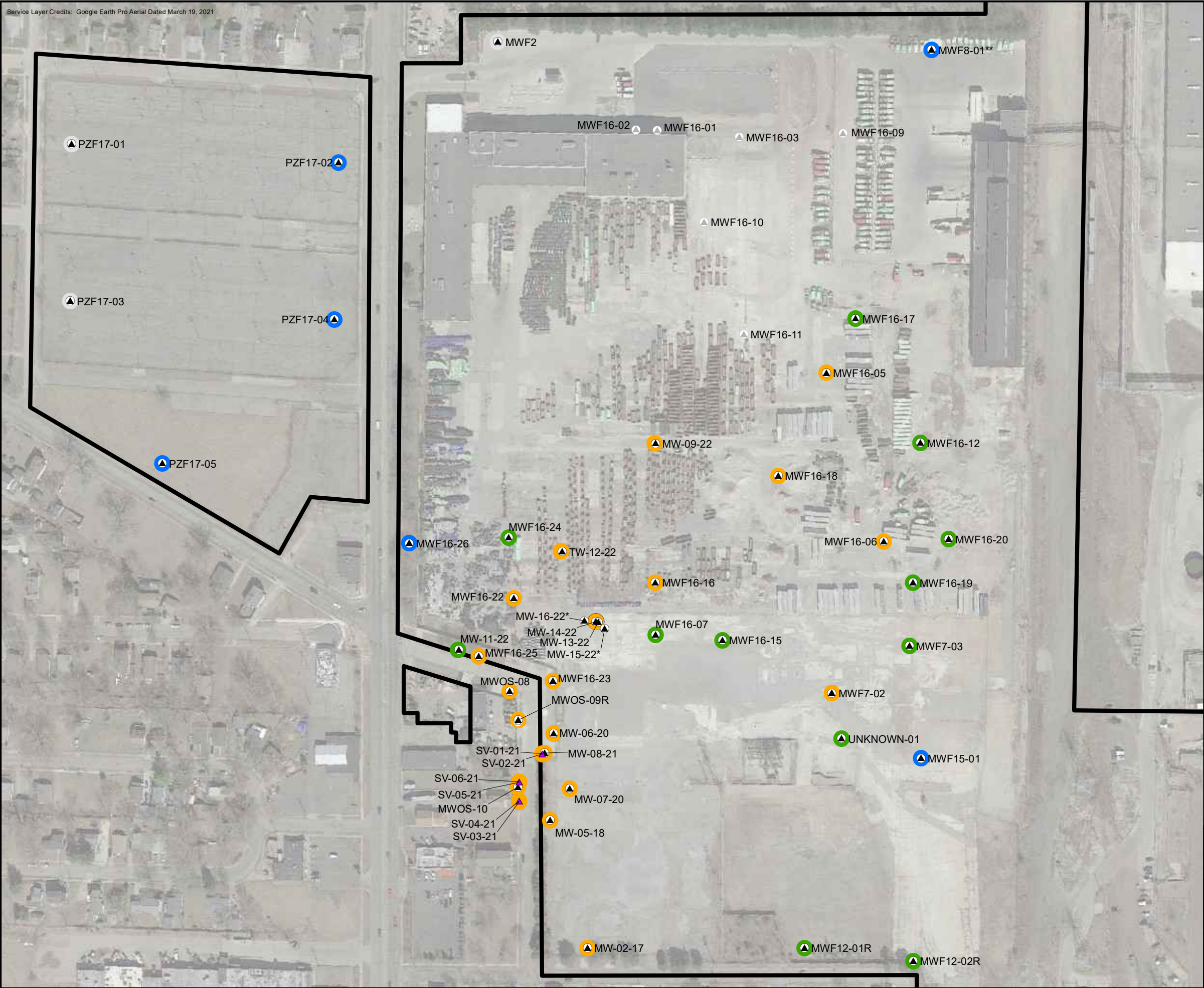
U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value.

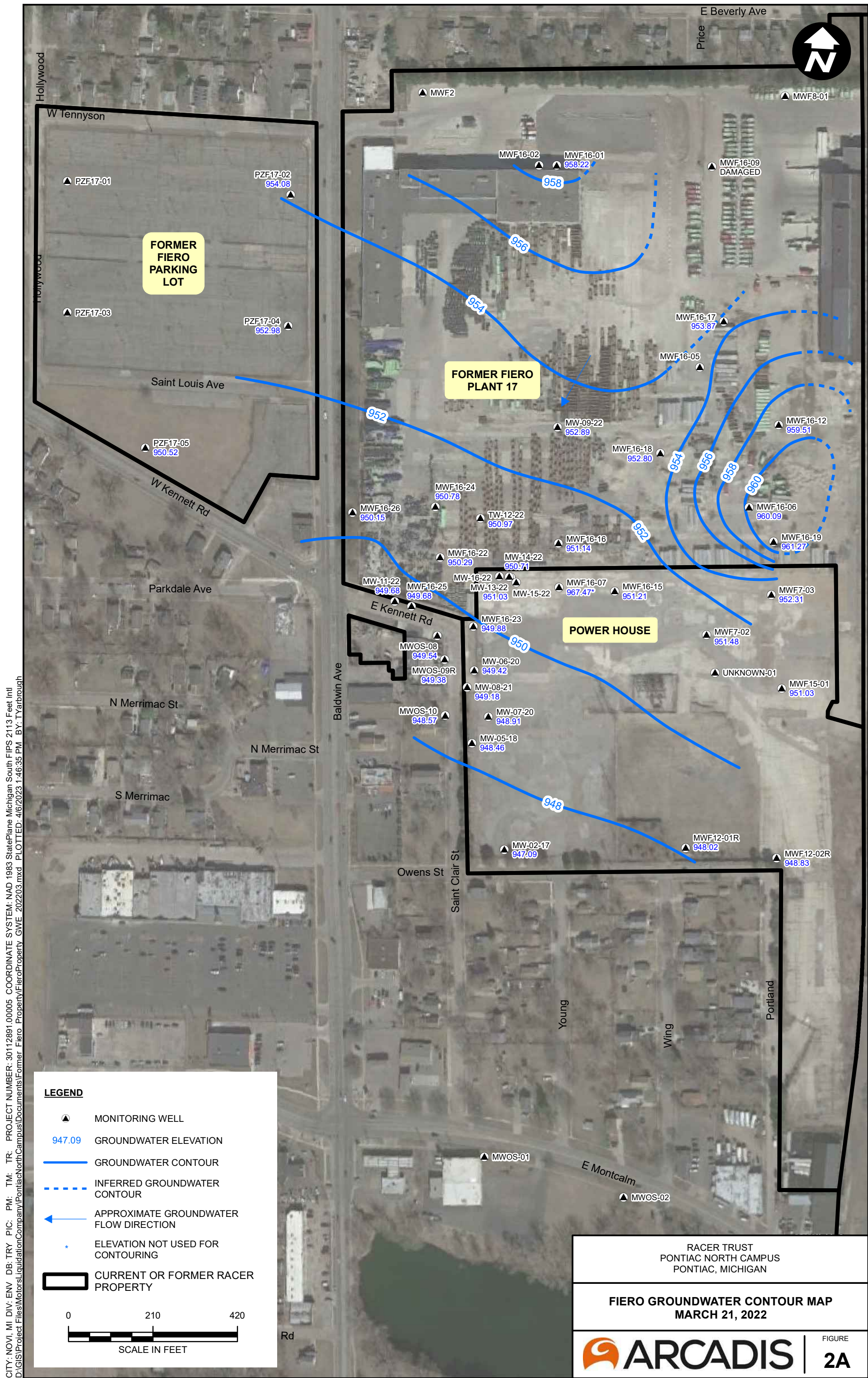
SOG - Slab-On-Grade

SSVIAC - Site-Specific Volatilization to Indoor Air Criteria

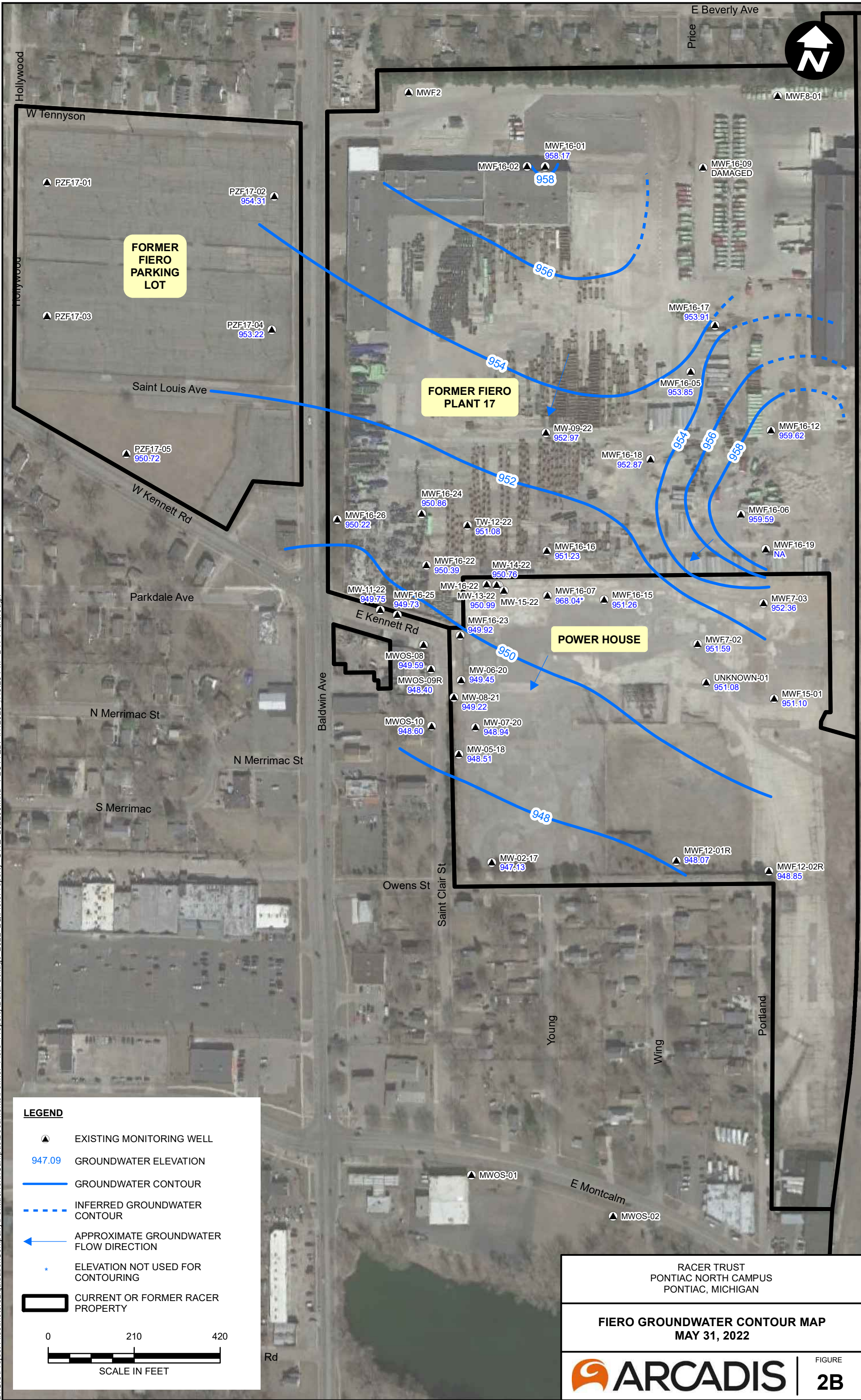
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LEGEND

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



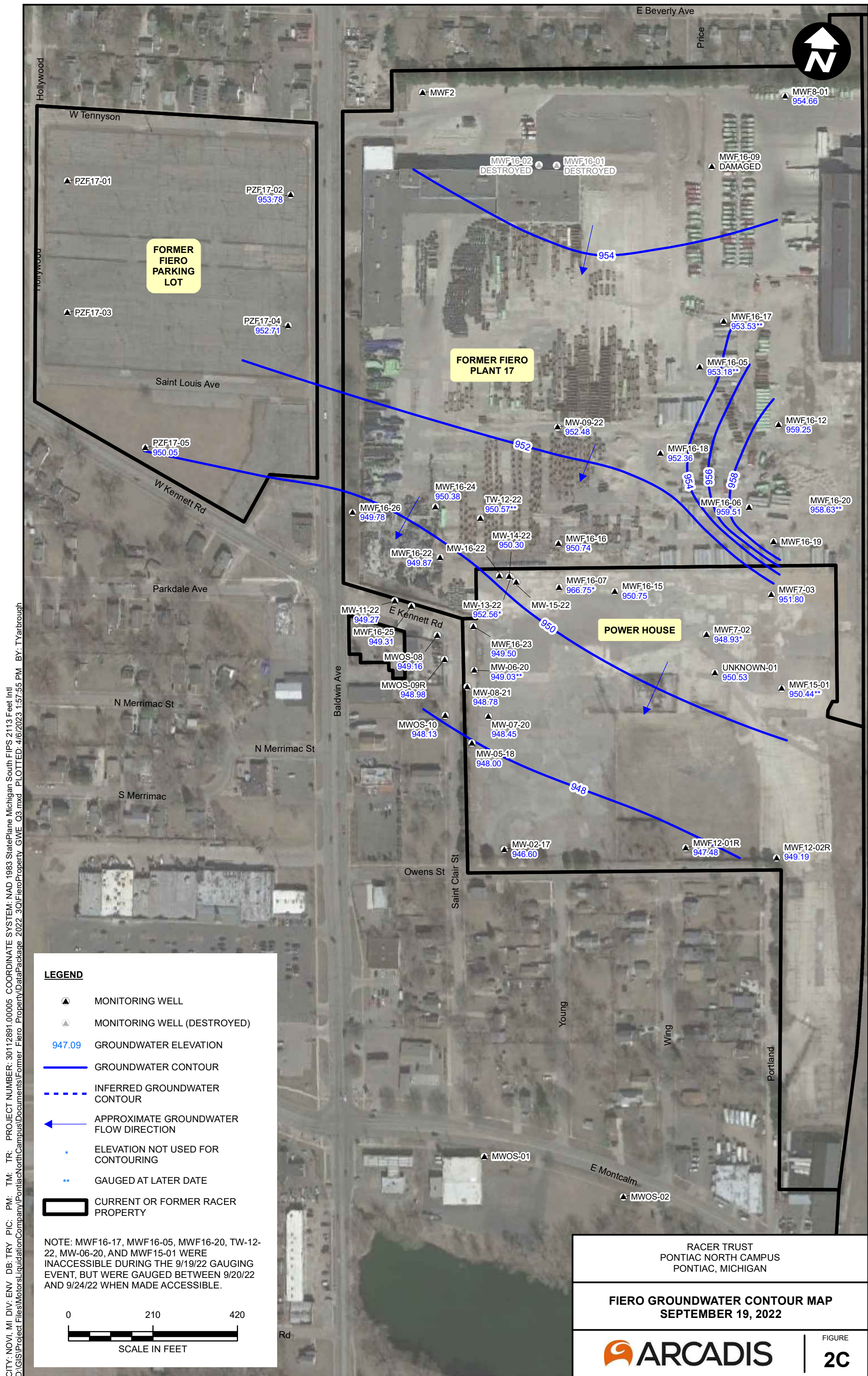
SCALE IN FEET

RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

FIERO GROUNDWATER CONTOUR MAP
MAY 31, 2022



FIGURE
2B



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LEGEND

- ▲ MONITORING WELL
- ▲ MONITORING WELL (DESTROYED)
- 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: MWF16-16, MWF16-24, AND TW-12-22 WERE INACCESSIBLE DURING THE 11/28/22 GAUGING EVENT, BUT WERE GAUGED ON 12/5/22 WHEN MADE ACCESSIBLE.

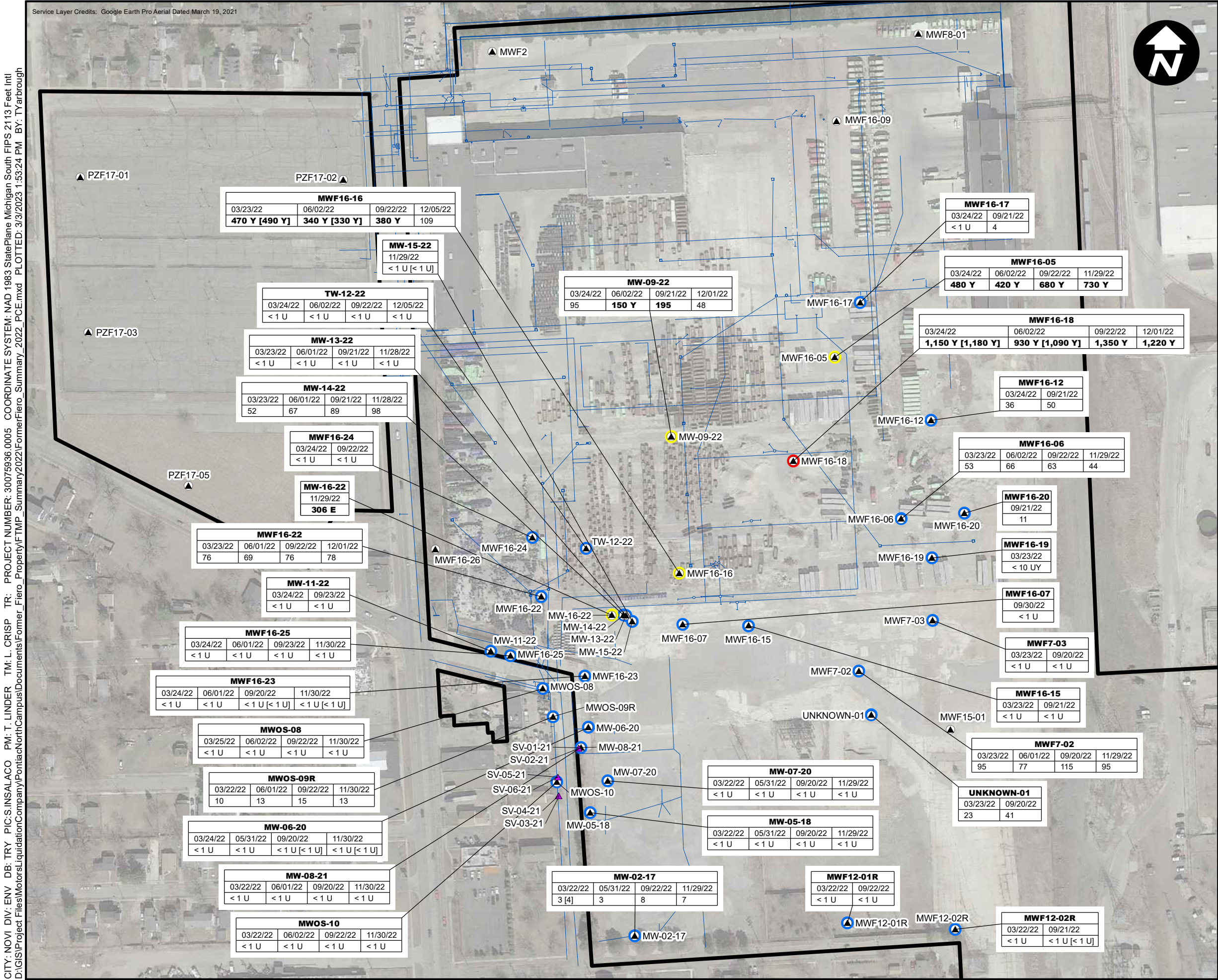


RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

FIERO GROUNDWATER CONTOUR MAP
NOVEMBER 28, 2022

ARCADIS

FIGURE
2D



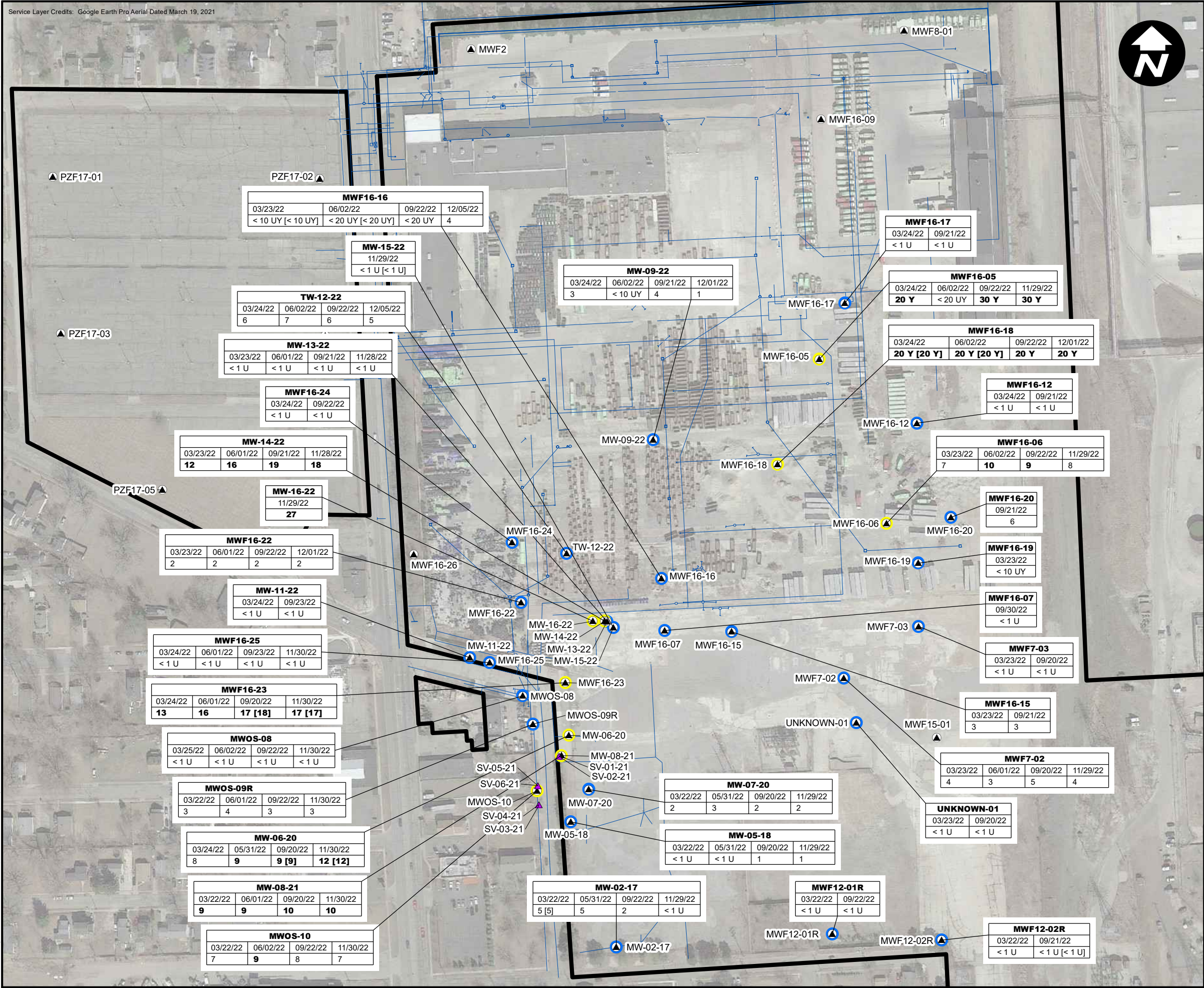
Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG
250	130	3,400

PCE	TETRACHLOROETHENE
BASE	BASEMENT SCENARIO
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.



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 - 81 µg/L
- > 81 µg/L

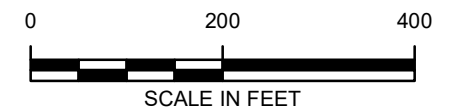
Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG
15	8.1	210

- TCE TRICHLOROETHENE
- BASE BASEMENT SCENARIO.
- 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.



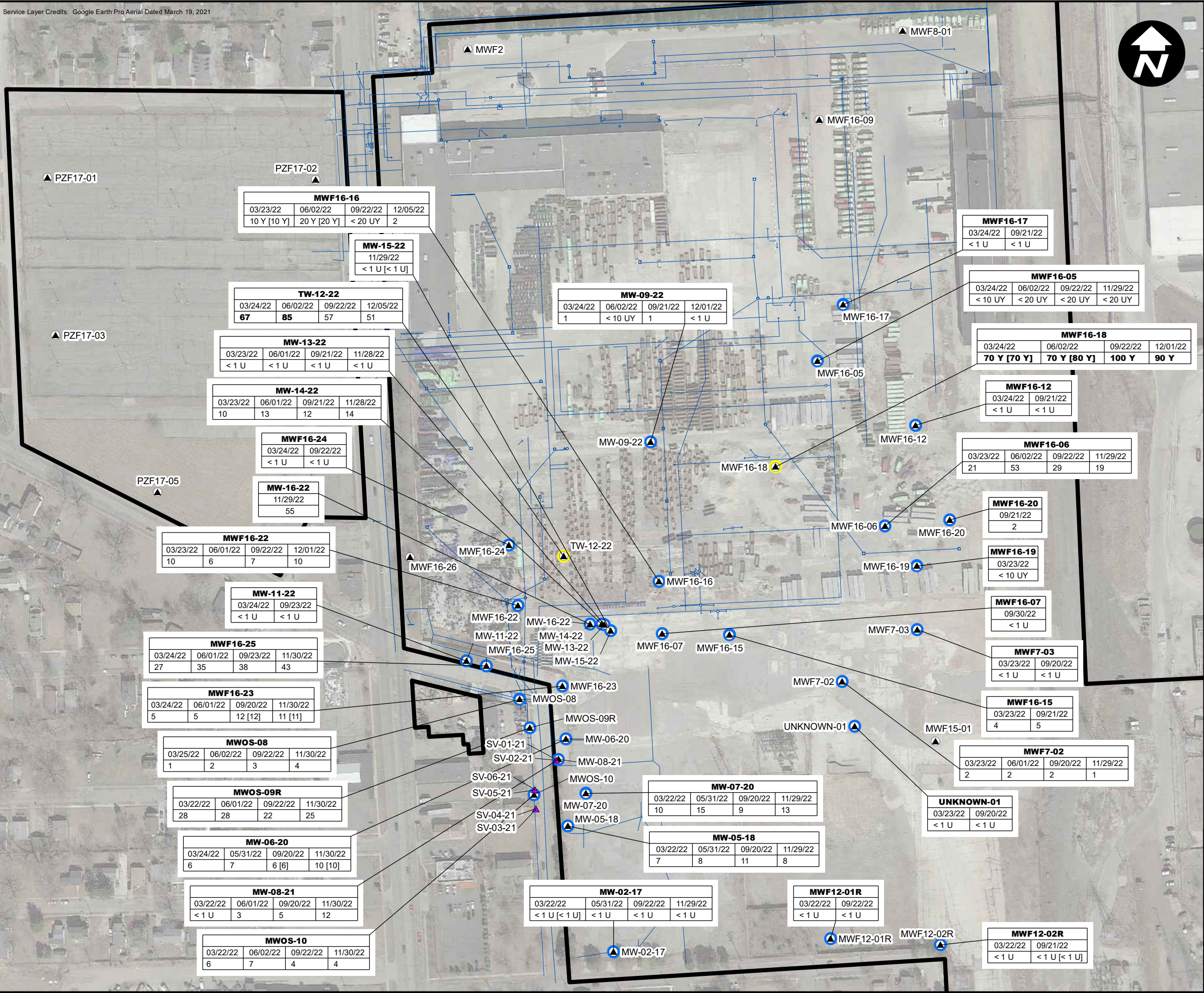
RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

CONCENTRATION OF TRICHLOROETHENE IN GROUNDWATER



FIGURE

4



LEGEND

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

CONCENTRATION OF DCE IN GROUNDWATER

- < 62 µg/L
- 62 - 620 µg/L
- > 620 µg/L

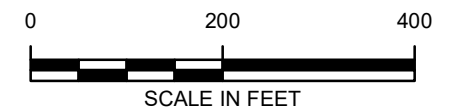
Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG
110	62	2,300

- DCE cis-1,2-DICHLOROETHENE
- BASE BASEMENT SCENARIO.
- 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.



RACER TRUST
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PONTIAC, MICHIGAN

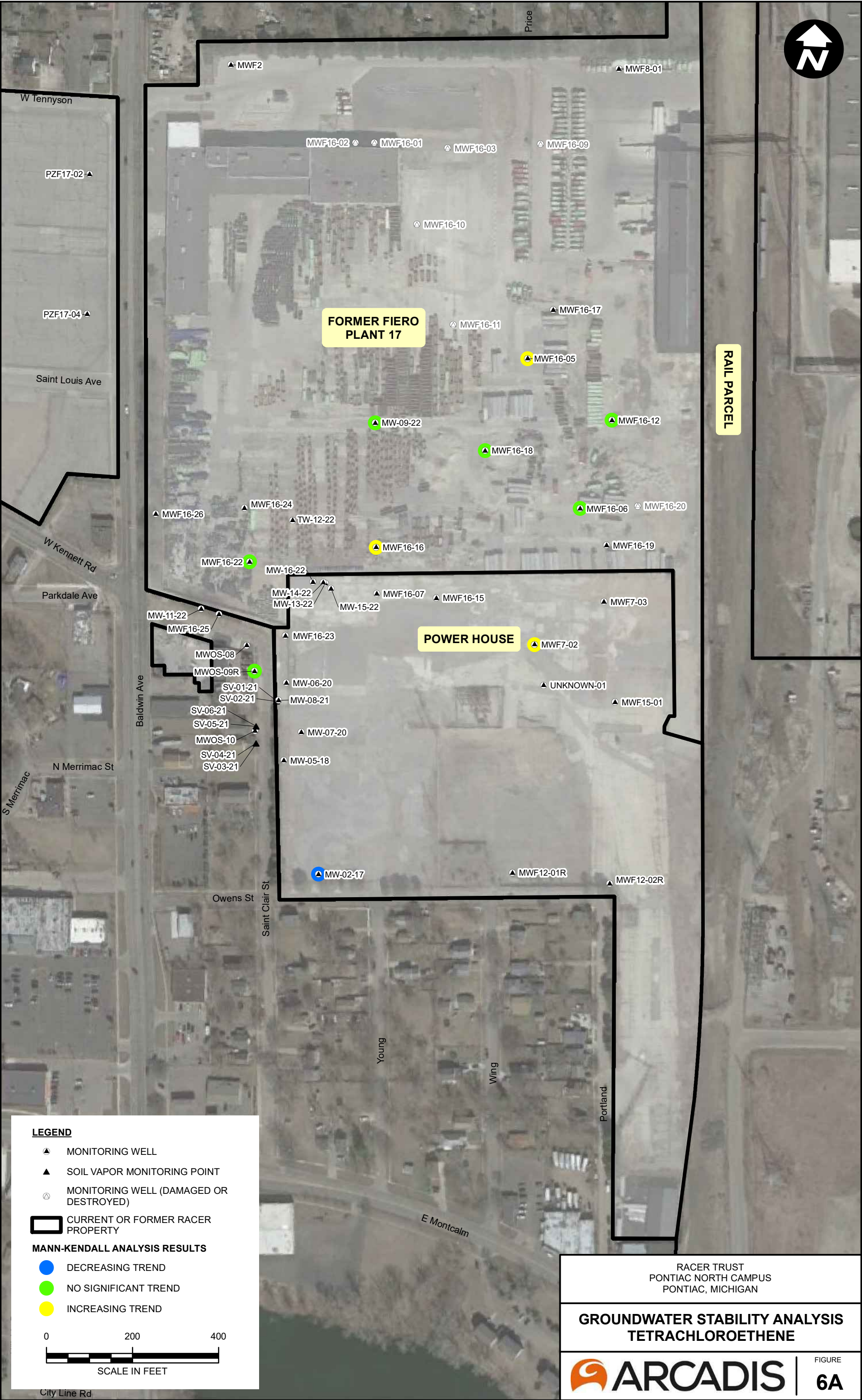
CONCENTRATION OF CIS-1,2-DICHLOROETHENE IN GROUNDWATER



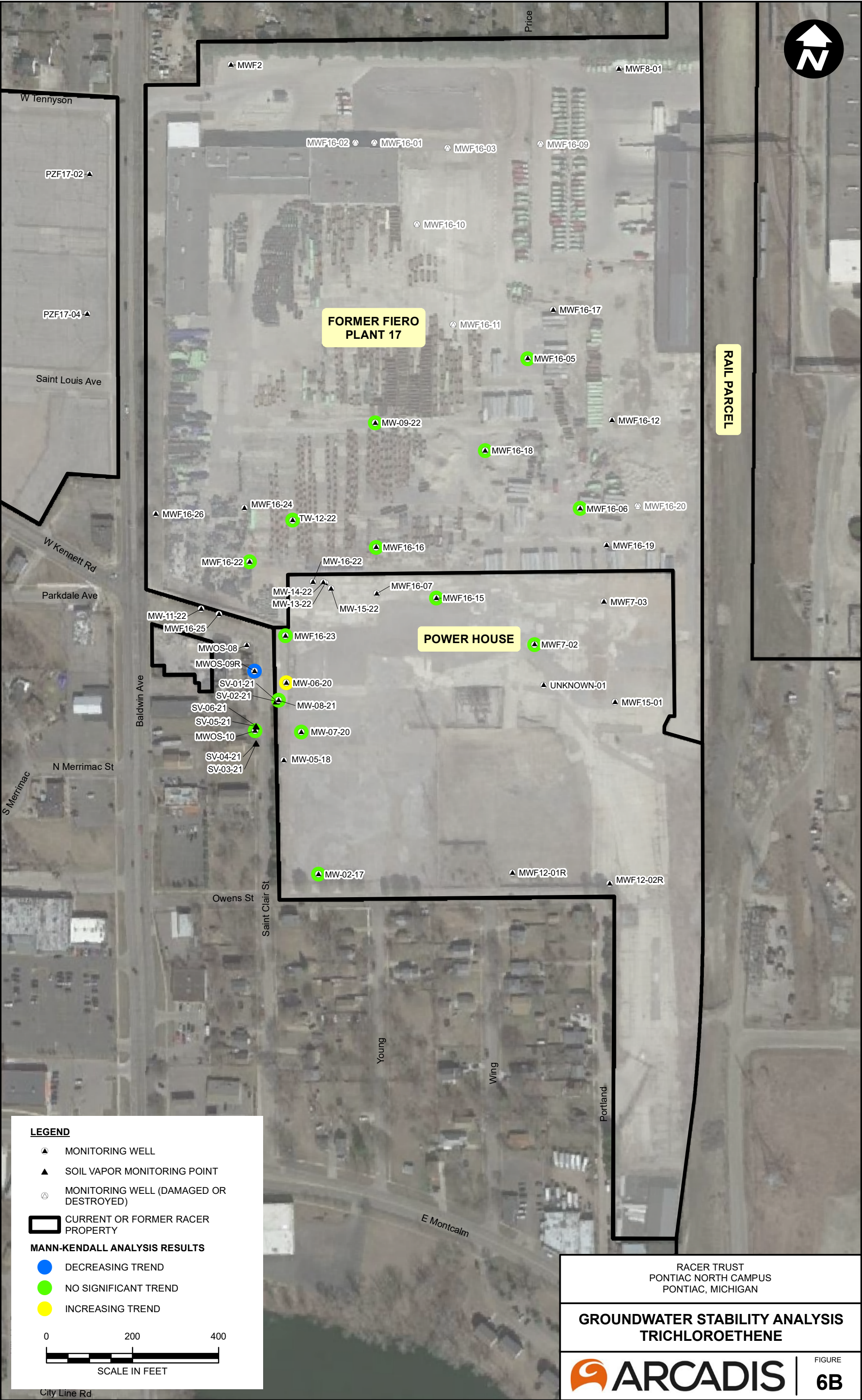
FIGURE

5

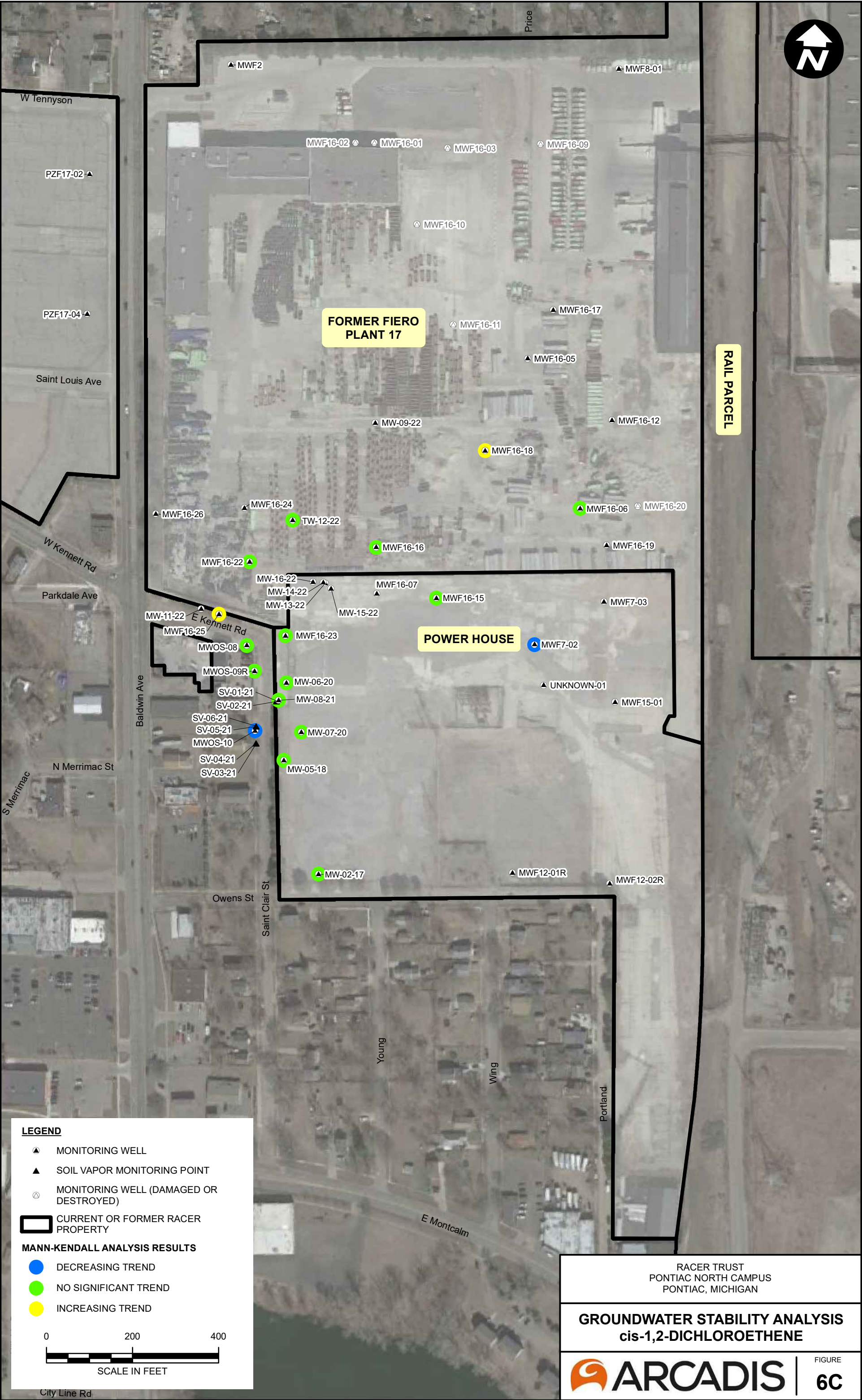
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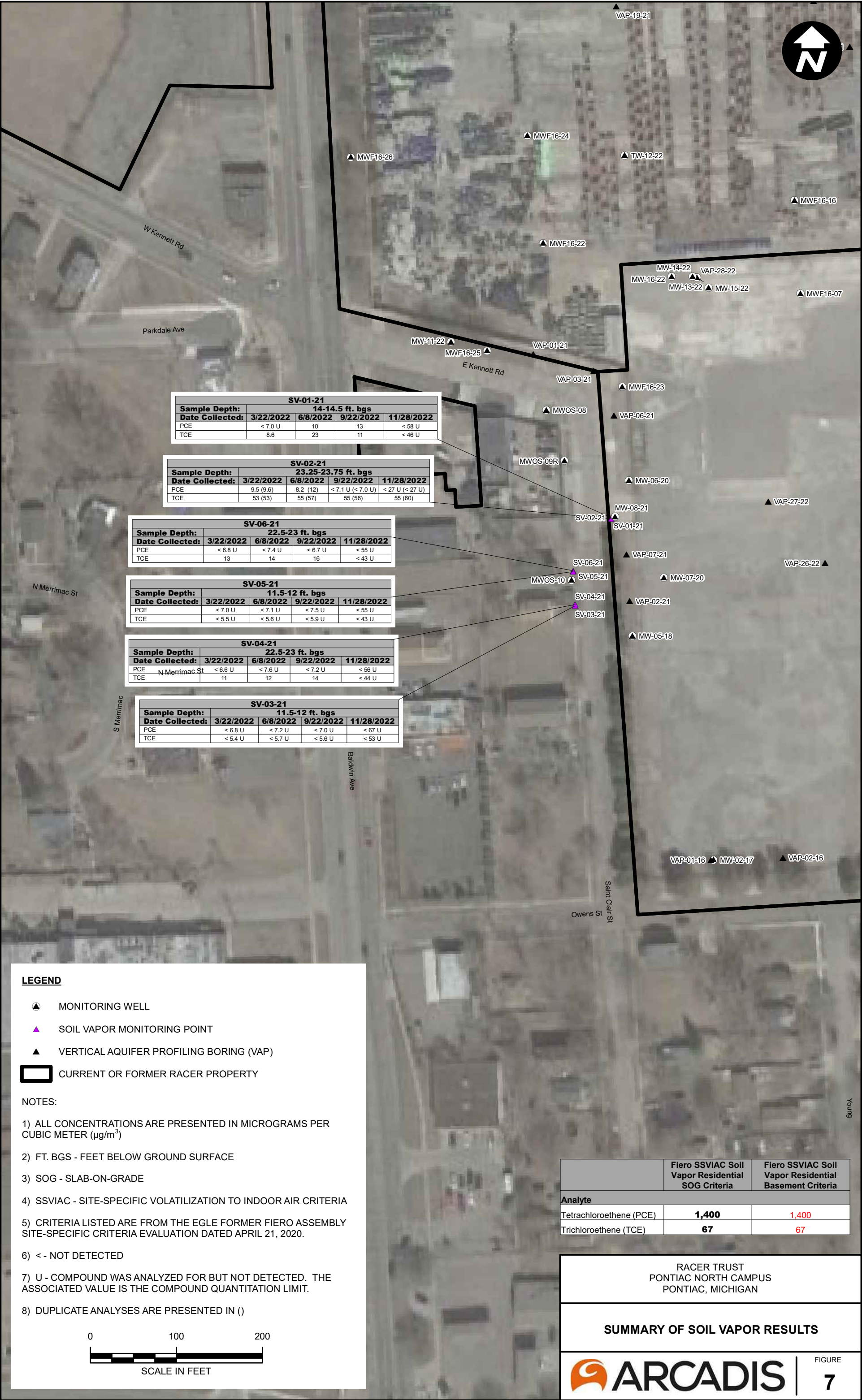
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Appendix A

Laboratory Analytical Reports



Analytical Laboratory Report

Report ID: S34186.01(01)
Generated on 03/25/2022

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): S34186.01-S34186.08
Project: 30112891.00005 / Racer PNC
Collected Date(s): 03/22/2022 - 03/23/2022
Submitted Date/Time: 03/23/2022 15:00
Sampled by: Christina Weaver
P.O. #: 30112891.00005

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- Cover Page (Page 1)
- General Report Notes (Page 2)
- Report Narrative (Page 2)
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- 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 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
S34186.01	MW-05-18_GW-032222	Groundwater	03/22/22 13:20
S34186.02	MW-02-17_GW-032222	Groundwater	03/22/22 14:40
S34186.03	DUP-02_GW-032222	Groundwater	03/22/22 00:01
S34186.04	MW-08-21_GW-032222	Groundwater	03/22/22 15:40
S34186.05	MWF16-15_GW-032322	Groundwater	03/23/22 10:15
S34186.06	MW-13-22_GW-032322	Groundwater	03/23/22 11:40
S34186.07	MW-14-22_GW-032322	Groundwater	03/23/22 12:55
S34186.08	Trip Blank	Water	03/23/22 00:01



Analytical Laboratory Report

Lab Sample ID: S34186.01

Sample Tag: MW-05-18_GW-032222

Collected Date/Time: 03/22/2022 13:20

Matrix: Groundwater

COC Reference: 140668

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/25/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 00:06, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34186.01 (continued)

Sample Tag: MW-05-18_GW-032222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 00:06, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34186.02

Sample Tag: MW-02-17_GW-032222

Collected Date/Time: 03/22/2022 14:40

Matrix: Groundwater

COC Reference: 140668

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/25/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 00:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	3	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	5	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34186.02 (continued)

Sample Tag: MW-02-17_GW-032222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 00:25, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34186.03

Sample Tag: DUP-02_GW-032222

Collected Date/Time: 03/22/2022 00:01

Matrix: Groundwater

COC Reference: 140668

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/25/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 00:44, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	4	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	5	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34186.03 (continued)

Sample Tag: DUP-02_GW-032222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 00:44, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34186.04

Sample Tag: MW-08-21_GW-032222

Collected Date/Time: 03/22/2022 15:40

Matrix: Groundwater

COC Reference: 140668

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/25/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 01:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	9	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34186.04 (continued)

Sample Tag: MW-08-21_GW-032222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 01:04, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34186.05

Sample Tag: MWF16-15_GW-032322

Collected Date/Time: 03/23/2022 10:15

Matrix: Groundwater

COC Reference: 140668

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/25/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 01:23, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	4	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	9	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	3	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34186.05 (continued)
Sample Tag: MWF16-15_GW-032322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 01:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34186.06

Sample Tag: MW-13-22_GW-032322

Collected Date/Time: 03/23/2022 11:40

Matrix: Groundwater

COC Reference: 140668

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/25/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 01:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34186.06 (continued)
Sample Tag: MW-13-22_GW-032322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 01:42, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34186.07

Sample Tag: MW-14-22_GW-032322

Collected Date/Time: 03/23/2022 12:55

Matrix: Groundwater

COC Reference: 140668

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/25/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 02:02, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	1	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	10	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	10	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	52	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	12	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34186.07 (continued)

Sample Tag: MW-14-22_GW-032322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/25/22 02:02, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34186.08

Sample Tag: Trip Blank

Collected Date/Time: 03/23/2022 00:01

Matrix: Water

COC Reference: 140668

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/25/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/24/22 23:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34186.08 (continued)

Sample Tag: Trip Blank

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/24/22 23:09, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S34186

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

Project: 30112891.00005 / Racer PNC

Submitted:03/23/2022 15:00 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 4.4
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: S34268.01(01)
Generated on 04/01/2022

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): S34268.01-S34268.12
Project: 30112891.00005 / Racer PNC
Collected Date(s): 03/23/2022 - 03/24/2022
Submitted Date/Time: 03/25/2022 12:45
Sampled by: Christina Weaver
P.O. #: 30112891.00005

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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, acrylonitrile, and 2-chlorovinylethyl 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 (12 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S34268.01	Trip Blank	Water	03/23/22 00:01
S34268.02	MWF16-22_GW-032322	Groundwater	03/23/22 14:45
S34268.03	MWF16-16_GW-032322	Groundwater	03/23/22 15:40
S34268.04	MW-06-20_GW-032422	Groundwater	03/24/22 09:25
S34268.05	MWF16-23_GW-032422	Groundwater	03/24/22 10:30
S34268.06	MWF16-25_GW-032422	Groundwater	03/24/22 11:25
S34268.07	MW-11-22_GW-032422	Groundwater	03/24/22 12:15
S34268.08	MWF16-24_GW-032422	Groundwater	03/24/22 13:40
S34268.09	MWF16-24_GW-032422 MS	Groundwater	03/24/22 13:40
S34268.10	MWF16-24_GW-032422 MSD	Groundwater	03/24/22 13:40
S34268.11	DUP-03_GW-032322	Groundwater	03/23/22 00:01
S34268.12	TW-12-22_GW-032422	Groundwater	03/24/22 15:20



Analytical Laboratory Report

Lab Sample ID: S34268.01

Sample Tag: Trip Blank

Collected Date/Time: 03/23/2022 00:01

Matrix: Water

COC Reference: 140670

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 02:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34268.01 (continued)

Sample Tag: Trip Blank

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 02:26, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34268.02

Sample Tag: MWF16-22_GW-032322

Collected Date/Time: 03/23/2022 14:45

Matrix: Groundwater

COC Reference: 140670

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 03:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	10	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	76	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	2	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34268.02 (continued)

Sample Tag: MWF16-22_GW-032322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 03:13, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34268.03

Sample Tag: MWF16-16_GW-032322

Collected Date/Time: 03/23/2022 15:40

Matrix: Groundwater

COC Reference: 140670

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 17:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	500		ug/L	10	67-64-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	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
cis-1,2-Dichloroethene	10	10		ug/L	10	156-59-2	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
Tetrachloroethene	470	10		ug/L	10	127-18-4	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
Trichloroethene	Not detected	10		ug/L	10	79-01-6	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34268.03 (continued)

Sample Tag: MWF16-16_GW-032322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 17:50, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
Isopropylbenzene	Not detected	10		ug/L	10	98-82-8	Y
Cyclohexane	Not detected	10		ug/L	10	110-82-7	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34268.04

Sample Tag: MW-06-20_GW-032422

Collected Date/Time: 03/24/2022 09:25

Matrix: Groundwater

COC Reference: 140670

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 04:00, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	6	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	8	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34268.04 (continued)
Sample Tag: MW-06-20_GW-032422

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 04:00, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34268.05

Sample Tag: MWF16-23_GW-032422

Collected Date/Time: 03/24/2022 10:30

Matrix: Groundwater

COC Reference: 140670

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 04:23, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	5	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	8	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	13	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34268.05 (continued)
Sample Tag: MWF16-23_GW-032422

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 04:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34268.06

Sample Tag: MWF16-25_GW-032422

Collected Date/Time: 03/24/2022 11:25

Matrix: Groundwater

COC Reference: 140670

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 04:46, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	4	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	27	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34268.06 (continued)

Sample Tag: MWF16-25_GW-032422

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 04:46, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34268.07

Sample Tag: MW-11-22_GW-032422

Collected Date/Time: 03/24/2022 12:15

Matrix: Groundwater

COC Reference: 140670

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 05:11, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	1	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34268.07 (continued)
Sample Tag: MW-11-22_GW-032422

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 05:11, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34268.08

Sample Tag: MWF16-24_GW-032422

Collected Date/Time: 03/24/2022 13:40

Matrix: Groundwater

COC Reference: 140670

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 02:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34268.08 (continued)
Sample Tag: MWF16-24_GW-032422

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 02:50, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34268.09

Sample Tag: MWF16-24_GW-032422 MS

Collected Date/Time: 03/24/2022 13:40

Matrix: Groundwater

COC Reference: 140670

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 00:29, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	53	25		ug/L	1	78-93-3	1
Benzene	52	1		ug/L	1	71-43-2	1
Bromodichloromethane	49	1		ug/L	1	75-27-4	1
Bromoform	50	1		ug/L	1	75-25-2	1
Bromomethane	50	5		ug/L	1	74-83-9	1
Carbon disulfide	51	5		ug/L	1	75-15-0	1
Carbon tetrachloride	45	1		ug/L	1	56-23-5	1
Chlorobenzene	51	1		ug/L	1	108-90-7	1
Chloroethane	50	5		ug/L	1	75-00-3	1
Chloroform	50	1		ug/L	1	67-66-3	1
Chloromethane	49	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	50	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	50	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	45	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	52	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	50	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	49	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	53	1		ug/L	1	156-59-2	1
Dibromochloromethane	50	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	42	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	49	1		ug/L	1	156-60-5	1
Ethylbenzene	51	1		ug/L	1	100-41-4	1
2-Hexanone	53	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	53	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	50	5		ug/L	1	1634-04-4	1
Methylene chloride	51	5		ug/L	1	75-09-2	1
Styrene	53	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	48	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	52	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	50	5		ug/L	1	120-82-1	1
Tetrachloroethene	49	1		ug/L	1	127-18-4	1
Toluene	52	1		ug/L	1	108-88-3	1
Trichloroethene	50	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	45	1		ug/L	1	75-69-4	1
Vinyl chloride	49	1		ug/L	1	75-01-4	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S34268.09 (continued)
Sample Tag: MWF16-24_GW-032422 MS

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 00:29, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	51	1		ug/L	1	95-47-6	1
p,m-Xylene*	104	2		ug/L	1		1
Isopropylbenzene	51	1		ug/L	1	98-82-8	1
Cyclohexane	47	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	50	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	46	1		ug/L	1	75-35-4	1
Methyl Acetate	42	10		ug/L	1	79-20-9	1
Methyl cyclohexane	45	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	46	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	52	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	54	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	51	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	51	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S34268.10

Sample Tag: MWF16-24_GW-032422 MSD

Collected Date/Time: 03/24/2022 13:40

Matrix: Groundwater

COC Reference: 140670

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 00:52, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	47	25		ug/L	1	78-93-3	1
Benzene	52	1		ug/L	1	71-43-2	1
Bromodichloromethane	49	1		ug/L	1	75-27-4	1
Bromoform	51	1		ug/L	1	75-25-2	1
Bromomethane	49	5		ug/L	1	74-83-9	1
Carbon disulfide	50	5		ug/L	1	75-15-0	1
Carbon tetrachloride	43	1		ug/L	1	56-23-5	1
Chlorobenzene	53	1		ug/L	1	108-90-7	1
Chloroethane	48	5		ug/L	1	75-00-3	1
Chloroform	50	1		ug/L	1	67-66-3	1
Chloromethane	48	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	50	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	52	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	46	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	52	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	52	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	51	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	52	1		ug/L	1	156-59-2	1
Dibromochloromethane	51	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	41	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	49	1		ug/L	1	156-60-5	1
Ethylbenzene	52	1		ug/L	1	100-41-4	1
2-Hexanone	50	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	50	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	49	5		ug/L	1	1634-04-4	1
Methylene chloride	51	5		ug/L	1	75-09-2	1
Styrene	54	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	48	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	52	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	53	5		ug/L	1	120-82-1	1
Tetrachloroethene	49	1		ug/L	1	127-18-4	1
Toluene	51	1		ug/L	1	108-88-3	1
Trichloroethene	49	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	44	1		ug/L	1	75-69-4	1
Vinyl chloride	47	1		ug/L	1	75-01-4	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S34268.10 (continued)
Sample Tag: MWF16-24_GW-032422 MSD

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 00:52, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	52	1		ug/L	1	95-47-6	1
p,m-Xylene*	106	2		ug/L	1		1
Isopropylbenzene	52	1		ug/L	1	98-82-8	1
Cyclohexane	45	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	50	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	47	1		ug/L	1	75-35-4	1
Methyl Acetate	40	10		ug/L	1	79-20-9	1
Methyl cyclohexane	46	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	45	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	53	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	53	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	51	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	51	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S34268.11

Sample Tag: DUP-03_GW-032322

Collected Date/Time: 03/23/2022 00:01

Matrix: Groundwater

COC Reference: 140670

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 18:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	500		ug/L	10	67-64-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	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
cis-1,2-Dichloroethene	10	10		ug/L	10	156-59-2	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
Tetrachloroethene	490	10		ug/L	10	127-18-4	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
Trichloroethene	Not detected	10		ug/L	10	79-01-6	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34268.11 (continued)

Sample Tag: DUP-03_GW-032322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 18:09, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
Isopropylbenzene	Not detected	10		ug/L	10	98-82-8	Y
Cyclohexane	Not detected	10		ug/L	10	110-82-7	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34268.12

Sample Tag: TW-12-22_GW-032422

Collected Date/Time: 03/24/2022 15:20

Matrix: Groundwater

COC Reference: 140670

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 05:58, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	8	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	67	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	3	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	6	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34268.12 (continued)
Sample Tag: TW-12-22_GW-032422

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 05:58, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	9	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S34268

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

Project: 30112891.00005 / Racer PNC

Submitted:03/25/2022 12:45 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 4.4
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 # 1 OF 1

140670

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME LEXI CRISP; TIFFANY LINDER			
COMPANY ARCADIS			
ADDRESS 28550 CABOT DRIVE #500			
CITY NOVI	STATE MI	ZIP CODE 48377	
PHONE NO. 614-985-9163	FAX NO. —	P.O. NO. —	
E-MAIL ADDRESS LEXI.CRISP@ARCADIS.COM; TIFFANY.LINDER@ARCADIS.COM		QUOTE NO. —	

CONTACT NAME ACCOUNTS PAYABLE		☐ SAME	
COMPANY ARCADIS			
ADDRESS 630 PLAZA DRIVE #800			
CITY HIGHLANDS RANCH	STATE CO	ZIP CODE 80129	
PHONE NO. —	E-MAIL ADDRESS ACCOUNTSPAYABLE.ADMINISTRATIVE@ARCADIS.COM		

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME 3012891.00005 / RACER PNC	SAMPLER(S) - PLEASE PRINT/SIGN NAME CHRISTINA WEAVER / Christina W
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	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID	
	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR	W=WASTE

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	# SITE SPECIFIC VOCs											Certifications ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES Project Locations ☐ Detroit ☐ New York ☐ Other Special Instructions
	DATE	TIME																						
34268.01	3/23/22	—	TRIP BLANK	GW	1		1						X											(1) TRIP BLANK
.02	3/23/22	1445	MWF16-22-GW-032322	GW	3		3						X											
.03	3/23/22	1540	MWF16-16-GW-032322	GW	3		3						X											
.04	3/24/22	0925	MW-06-20-GW-032422	GW	3		3						X											
.05	3/24/22	1030	MWF16-23-GW-032422	GW	3		3						X											
.06	3/24/22	1125	MWF16-25-GW-032422	GW	3		3						X											
.07	3/24/22	1215	MW-11-22-GW-032422	GW	3		3						X											
.08	3/24/22	1340	MWF16-24-GW-032422	GW	3		3						X											PERFORM MS/MSD
.09	3/24/22	1340	MWF16-24-MS-GW-032422	GW	3		3						X											PERFORM MS/MSD
.10	3/24/22	1340	MWF16-24-MSD-GW-032422	GW	3		3						X											PERFORM MS/MSD
.11	3/23/22	—	DUP-03-GW-032322	GW	3		3						X											DUPLICATE
.12	3/24/22	1520	TW-12-22-GW-032422	GW	3		3						X											

RELINQUISHED BY: SIGNATURE/ORGANIZATION <i>Christina Weaver</i>	☒ Sampler	DATE 3/25/22	TIME 10:30
RECEIVED BY: SIGNATURE/ORGANIZATION <i>Gary Schulte</i>		DATE 3/25/22	TIME 10:30
RELINQUISHED BY: SIGNATURE/ORGANIZATION <i>Christina Weaver</i>		DATE 3/25/22	TIME 12:45
RECEIVED BY: SIGNATURE/ORGANIZATION <i>M. Chilcote</i>		DATE 3/25/22	TIME 12:45

RELINQUISHED BY: SIGNATURE/ORGANIZATION <i>Gary Schulte</i>	DATE 3/25/22	TIME 11:30
RECEIVED BY: SIGNATURE/ORGANIZATION <i>Christina Weaver</i>	DATE 3/25/22	TIME 11:30
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
NOTES:		TEMP. ON ARRIVAL 4.4

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



Analytical Laboratory Report

Report ID: S34270.01(01)
Generated on 04/01/2022

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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East Lansing, MI 48823

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

Report Summary

Lab Sample ID(s): S34270.01-S34270.10
Project: 30112891.00005 / Racer PNC
Collected Date(s): 03/23/2022 - 03/25/2022
Submitted Date/Time: 03/25/2022 12:45
Sampled by: Gary Schafer
P.O. #: 30112891.00005

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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, acrylonitrile, and 2-chlorovinylethyl 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 (10 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S34270.01	Trip Blank	Water	03/24/22 00:01
S34270.02	MWF16-05_GW-032422	Groundwater	03/24/22 10:36
S34270.03	MWF16-17_GW-032422	Groundwater	03/24/22 12:01
S34270.04	MWF16-12_GW-032422	Groundwater	03/24/22 13:36
S34270.05	MWF16-18_GW-032422	Groundwater	03/24/22 14:46
S34270.06	MW-09-22_GW-032422	Groundwater	03/24/22 15:51
S34270.07	DUP-04_GW-032422	Groundwater	03/24/22 00:01
S34270.08	MWF16-06_GW-032322	Groundwater	03/23/22 16:36
S34270.09	MWF16-19_GW-032322	Groundwater	03/23/22 15:26
S34270.10	MWOS-08_GW-032522	Groundwater	03/25/22 09:36



Analytical Laboratory Report

Lab Sample ID: S34270.01

Sample Tag: Trip Blank

Collected Date/Time: 03/24/2022 00:01

Matrix: Water

COC Reference: 140672

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 15:32, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34270.01 (continued)

Sample Tag: Trip Blank

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 15:32, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34270.02

Sample Tag: MWF16-05_GW-032422

Collected Date/Time: 03/24/2022 10:36

Matrix: Groundwater

COC Reference: 140672

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 16:55, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	500		ug/L	10	67-64-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	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
cis-1,2-Dichloroethene	Not detected	10		ug/L	10	156-59-2	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
Tetrachloroethene	480	10		ug/L	10	127-18-4	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34270.02 (continued)
Sample Tag: MWF16-05_GW-032422

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 16:55, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
Isopropylbenzene	Not detected	10		ug/L	10	98-82-8	Y
Cyclohexane	Not detected	10		ug/L	10	110-82-7	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34270.03

Sample Tag: MWF16-17_GW-032422

Collected Date/Time: 03/24/2022 12:01

Matrix: Groundwater

COC Reference: 140672

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 19:27, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	1	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34270.03 (continued)

Sample Tag: MWF16-17_GW-032422

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 19:27, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34270.04

Sample Tag: MWF16-12_GW-032422

Collected Date/Time: 03/24/2022 13:36

Matrix: Groundwater

COC Reference: 140672

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 19:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	36	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34270.04 (continued)

Sample Tag: MWF16-12_GW-032422

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 19:50, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34270.05

Sample Tag: MWF16-18_GW-032422

Collected Date/Time: 03/24/2022 14:46

Matrix: Groundwater

COC Reference: 140672

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 17:18, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	500		ug/L	10	67-64-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	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
cis-1,2-Dichloroethene	70	10		ug/L	10	156-59-2	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
Tetrachloroethene	1,150	10		ug/L	10	127-18-4	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34270.05 (continued)

Sample Tag: MWF16-18_GW-032422

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 17:18, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
Isopropylbenzene	Not detected	10		ug/L	10	98-82-8	Y
Cyclohexane	Not detected	10		ug/L	10	110-82-7	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34270.06

Sample Tag: MW-09-22_GW-032422

Collected Date/Time: 03/24/2022 15:51

Matrix: Groundwater

COC Reference: 140672

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 20:36, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	1	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	1	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	95	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	3	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34270.06 (continued)

Sample Tag: MW-09-22_GW-032422

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 20:36, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34270.07

Sample Tag: DUP-04_GW-032422

Collected Date/Time: 03/24/2022 00:01

Matrix: Groundwater

COC Reference: 140672

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 17:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	500		ug/L	10	67-64-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	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
cis-1,2-Dichloroethene	70	10		ug/L	10	156-59-2	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
Tetrachloroethene	1,180	10		ug/L	10	127-18-4	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34270.07 (continued)

Sample Tag: DUP-04_GW-032422

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 17:41, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
Isopropylbenzene	Not detected	10		ug/L	10	98-82-8	Y
Cyclohexane	Not detected	10		ug/L	10	110-82-7	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34270.08

Sample Tag: MWF16-06_GW-032322

Collected Date/Time: 03/23/2022 16:36

Matrix: Groundwater

COC Reference: 140672

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 21:23, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	7	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	15	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	1	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	21	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	111	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	53	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	7	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34270.08 (continued)

Sample Tag: MWF16-06_GW-032322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 21:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	72	1		ug/L	1	75-34-3	
1,1-Dichloroethene	8	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34270.09

Sample Tag: MWF16-19_GW-032322

Collected Date/Time: 03/23/2022 15:26

Matrix: Groundwater

COC Reference: 140672

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 18:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	500		ug/L	10	67-64-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	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
cis-1,2-Dichloroethene	Not detected	10		ug/L	10	156-59-2	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
1,1,1-Trichloroethane	230	10		ug/L	10	71-55-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
Tetrachloroethene	Not detected	10		ug/L	10	127-18-4	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
Trichloroethene	Not detected	10		ug/L	10	79-01-6	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34270.09 (continued)

Sample Tag: MWF16-19_GW-032322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/31/22 18:04, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
Isopropylbenzene	Not detected	10		ug/L	10	98-82-8	Y
Cyclohexane	Not detected	10		ug/L	10	110-82-7	Y
1,1-Dichloroethane	40	10		ug/L	10	75-34-3	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34270.10

Sample Tag: MWOS-08_GW-032522

Collected Date/Time: 03/25/2022 09:36

Matrix: Groundwater

COC Reference: 140672

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 22:10, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	1	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34270.10 (continued)

Sample Tag: MWOS-08_GW-032522

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 22:10, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S34270

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

Project: 30112891.00005 / Racer PNC

Submitted:03/25/2022 12:45 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 4.4
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: _____

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Lexi Crisp ; Tiffany Linder			
COMPANY ARCADIS			
ADDRESS 28550 Cabot Dr. Suite 500			
CITY Novi		STATE MI	ZIP CODE 48377
PHONE NO. 614-985-9163		FAX NO.	P.O. NO.
E-MAIL ADDRESS Lexi.Crisp@arcadis.com / Tiffany.Linder@arcadis.com		QUOTE NO.	

CONTACT NAME		<i>Accounts Payable</i>		☐ SAME	
COMPANY					
ADDRESS					
CITY				STATE	
				ZIP CODE	
PHONE NO.			E-MAIL ADDRESS		

PROJECT NO./NAME <u>30112891.00005 / Racer PVC</u>	SAMPLER(S) - PLEASE PRINT/SIGN NAME <u>Gary Scholer / Gary Scholer</u>
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:	<i>Yes Belahai Arcadio</i>	DATE	TIME
SIGNATURE/ORGANIZATION		3/25/22	11:30
RECEIVED BY:	<i>J. Miller</i>	DATE	TIME
SIGNATURE/ORGANIZATION		3/25/22	11:30
RELINQUISHED BY:		DATE	TIME
SIGNATURE/ORGANIZATION	<i>J. Miller</i>	3/25/22	10:45
RECEIVED BY:	<i>M. Delator</i>	DATE	TIME
SIGNATURE/ORGANIZATION		3/25/22	12:45

RELINQUISHED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL <u>4.4</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: S34185.01(01)
Generated on 04/04/2022

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): S34185.01-S34185.12
Project: 30112891.00005 / Racer PNC
Collected Date(s): 03/22/2022 - 03/23/2022
Submitted Date/Time: 03/23/2022 15:00
Sampled by: Gary Schafer
P.O. #: 30112891.00005

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, acrylonitrile, and 2-chlorovinylethyl 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 (12 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S34185.01	MWOS-10_GW-032222	Groundwater	03/22/22 10:21
S34185.02	MWOS-09_GW-032222	Groundwater	03/22/22 11:51
S34185.03	MW-07-20_GW-032222	Groundwater	03/22/22 13:26
S34185.04	MW-07-20-MS_GW-032222	Groundwater	03/22/22 13:26
S34185.05	MW-07-20-MSD_GW-032222	Groundwater	03/22/22 13:26
S34185.06	MWF12-01R_GW-032222	Groundwater	03/22/22 15:01
S34185.07	MWF12-02R_GW-032222	Groundwater	03/22/22 16:01
S34185.08	DUP-01_GW-032222	Groundwater	03/22/22 00:01
S34185.09	Unknown-01_GW-032322	Groundwater	03/23/22 10:06
S34185.10	MWF7-02_GW-032322	Groundwater	03/23/22 11:21
S34185.11	MWF7-03_GW-032322	Groundwater	03/23/22 13:11
S34185.12	Trip Blank	Water	03/22/22 00:01



Analytical Laboratory Report

Lab Sample ID: S34185.01

Sample Tag: MWOS-10_GW-032222

Collected Date/Time: 03/22/2022 10:21

Matrix: Groundwater

COC Reference: 140671

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 16:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	6	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	7	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34185.01 (continued)
Sample Tag: MWOS-10_GW-032222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 16:19, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34185.02

Sample Tag: MWOS-09_GW-032222

Collected Date/Time: 03/22/2022 11:51

Matrix: Groundwater

COC Reference: 140671

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 16:43, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	28	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	10	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	3	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34185.02 (continued)

Sample Tag: MWOS-09_GW-032222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 16:43, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34185.03

Sample Tag: MW-07-20_GW-032222

Collected Date/Time: 03/22/2022 13:26

Matrix: Groundwater

COC Reference: 140671

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 15:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	10	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	2	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34185.03 (continued)
Sample Tag: MW-07-20_GW-032222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 15:56, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34185.04

Sample Tag: MW-07-20-MS_GW-032222

Collected Date/Time: 03/22/2022 13:26

Matrix: Groundwater

COC Reference: 140671

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 12:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	50	25		ug/L	1	78-93-3	1
Benzene	52	1		ug/L	1	71-43-2	1
Bromodichloromethane	50	1		ug/L	1	75-27-4	1
Bromoform	52	1		ug/L	1	75-25-2	1
Bromomethane	53	5		ug/L	1	74-83-9	1
Carbon disulfide	54	5		ug/L	1	75-15-0	1
Carbon tetrachloride	47	1		ug/L	1	56-23-5	1
Chlorobenzene	52	1		ug/L	1	108-90-7	1
Chloroethane	52	5		ug/L	1	75-00-3	1
Chloroform	52	1		ug/L	1	67-66-3	1
Chloromethane	51	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	54	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	51	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	46	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	52	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	51	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	51	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	63	1		ug/L	1	156-59-2	1
Dibromochloromethane	51	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	46	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	51	1		ug/L	1	156-60-5	1
Ethylbenzene	52	1		ug/L	1	100-41-4	1
2-Hexanone	55	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	54	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	52	5		ug/L	1	1634-04-4	1
Methylene chloride	53	5		ug/L	1	75-09-2	1
Styrene	54	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	53	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	52	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	54	5		ug/L	1	120-82-1	1
Tetrachloroethene	51	1		ug/L	1	127-18-4	1
Toluene	52	1		ug/L	1	108-88-3	1
Trichloroethene	52	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	48	1		ug/L	1	75-69-4	1
Vinyl chloride	51	1		ug/L	1	75-01-4	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S34185.04 (continued)
Sample Tag: MW-07-20-MS_GW-032222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 12:41, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	52	1		ug/L	1	95-47-6	1
p,m-Xylene*	105	2		ug/L	1		1
Isopropylbenzene	52	1		ug/L	1	98-82-8	1
Cyclohexane	49	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	58	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	51	1		ug/L	1	75-35-4	1
Methyl Acetate	52	10		ug/L	1	79-20-9	1
Methyl cyclohexane	48	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	51	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	52	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	55	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	53	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	53	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S34185.05

Sample Tag: MW-07-20-MSD_GW-032222

Collected Date/Time: 03/22/2022 13:26

Matrix: Groundwater

COC Reference: 140671

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 13:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	57	25		ug/L	1	78-93-3	1
Benzene	51	1		ug/L	1	71-43-2	1
Bromodichloromethane	50	1		ug/L	1	75-27-4	1
Bromoform	50	1		ug/L	1	75-25-2	1
Bromomethane	51	5		ug/L	1	74-83-9	1
Carbon disulfide	52	5		ug/L	1	75-15-0	1
Carbon tetrachloride	46	1		ug/L	1	56-23-5	1
Chlorobenzene	50	1		ug/L	1	108-90-7	1
Chloroethane	51	5		ug/L	1	75-00-3	1
Chloroform	52	1		ug/L	1	67-66-3	1
Chloromethane	50	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	54	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	50	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	46	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	51	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	50	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	49	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	62	1		ug/L	1	156-59-2	1
Dibromochloromethane	50	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	45	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	51	1		ug/L	1	156-60-5	1
Ethylbenzene	49	1		ug/L	1	100-41-4	1
2-Hexanone	55	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	54	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	52	5		ug/L	1	1634-04-4	1
Methylene chloride	53	5		ug/L	1	75-09-2	1
Styrene	52	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	52	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	52	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	53	5		ug/L	1	120-82-1	1
Tetrachloroethene	50	1		ug/L	1	127-18-4	1
Toluene	51	1		ug/L	1	108-88-3	1
Trichloroethene	52	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	47	1		ug/L	1	75-69-4	1
Vinyl chloride	50	1		ug/L	1	75-01-4	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S34185.05 (continued)
Sample Tag: MW-07-20-MSD_GW-032222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 13:04, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	50	1		ug/L	1	95-47-6	1
p,m-Xylene*	101	2		ug/L	1		1
Isopropylbenzene	50	1		ug/L	1	98-82-8	1
Cyclohexane	47	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	57	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	50	1		ug/L	1	75-35-4	1
Methyl Acetate	53	10		ug/L	1	79-20-9	1
Methyl cyclohexane	47	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	49	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	51	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	54	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	53	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	52	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S34185.06

Sample Tag: MWF12-01R_GW-032222

Collected Date/Time: 03/22/2022 15:01

Matrix: Groundwater

COC Reference: 140671

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 04/02/22 08:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	36	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34185.06 (continued)
Sample Tag: MWF12-01R_GW-032222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 04/02/22 08:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34185.07

Sample Tag: MWF12-02R_GW-032222

Collected Date/Time: 03/22/2022 16:01

Matrix: Groundwater

COC Reference: 140671

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 17:06, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34185.07 (continued)
Sample Tag: MWF12-02R_GW-032222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 17:06, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34185.08

Sample Tag: DUP-01_GW-032222

Collected Date/Time: 03/22/2022 00:01

Matrix: Groundwater

COC Reference: 140671

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 17:29, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	26	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	12	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	4	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34185.08 (continued)

Sample Tag: DUP-01_GW-032222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 17:29, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34185.09

Sample Tag: Unknown-01_GW-032322

Collected Date/Time: 03/23/2022 10:06

Matrix: Groundwater

COC Reference: 140671

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 17:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	54	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	23	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34185.09 (continued)
Sample Tag: Unknown-01_GW-032322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 17:53, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34185.10

Sample Tag: MWF7-02_GW-032322

Collected Date/Time: 03/23/2022 11:21

Matrix: Groundwater

COC Reference: 140671

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 18:17, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	1	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	2	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	88	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	95	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	4	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34185.10 (continued)
Sample Tag: MWF7-02_GW-032322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 18:17, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	12	1		ug/L	1	75-34-3	
1,1-Dichloroethene	13	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34185.11

Sample Tag: MWF7-03_GW-032322

Collected Date/Time: 03/23/2022 13:11

Matrix: Groundwater

COC Reference: 140671

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 18:40, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34185.11 (continued)

Sample Tag: MWF7-03_GW-032322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 18:40, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S34185.12

Sample Tag: Trip Blank

Collected Date/Time: 03/22/2022 00:01

Matrix: Water

COC Reference: 140671

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 14:46, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S34185.12 (continued)

Sample Tag: Trip Blank

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 03/30/22 14:46, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S34185

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

Project: 30112891.00005 / Racer PNC

Submitted:03/23/2022 15:00 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 4.4
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 Trip blank not listed on 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 _____

140671

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME LEXI CRISP j Tiffany Linder	
COMPANY ARCADIS	
ADDRESS 23550 Cabot Dr. Suite 500	
CITY Novi	STATE MI
PHONE NO. 614-985-9143	ZIP CODE 48377
E-MAIL ADDRESS lexi.crisp@arcadis.com / Tiffany.Linder@arcadis.com	P.O. NO.
QUOTE NO. 	

CONTACT NAME Accounts Payable		☐ SAME
COMPANY Arcadis		
ADDRESS 		
CITY 	STATE 	ZIP CODE
PHONE NO. 	E-MAIL ADDRESS 	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME 30112891.00005 / Racer PVC	SAMPLER(S) - PLEASE PRINT/SIGN NAME Gary Schaefer / Gary A. Schaefer
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	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR
				W=WASTE	

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Site																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

RELINQUISHED BY: SIGNATURE/ORGANIZATION Charlotte Lyle	☒ Sampler	DATE 3/23/22	TIME 1400
RECEIVED BY: SIGNATURE/ORGANIZATION J. Miller		DATE 3/23/22	TIME 1400
RELINQUISHED BY: SIGNATURE/ORGANIZATION J. Miller		DATE 3/23/22	TIME 15:00
RECEIVED BY: SIGNATURE/ORGANIZATION M. Chitkala		DATE 3/23/22	TIME 1500

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 4.4

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



Report ID: S36554.01(02)
Generated on 06/24/2022
Replaces report S36554.01(01) generated on 06/09/2022

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): S36554.01-S36554.08
Project: 30112891.00005 / Racer PNC
Collected Date(s): 05/31/2022 - 06/01/2022
Submitted Date/Time: 06/01/2022 13:50
Sampled by: Christina Weaver
P.O. #: 30112891.00005

Table of Contents

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Maya Murshak
Technical Director



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

VOC pH check result corrected.

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



Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36554.01	MW-07-20_GW-053122	Groundwater	05/31/22 13:10
S36554.02	MW-07-20_GW-053122_MS	Groundwater	05/31/22 13:10
S36554.03	MW-07-20_GW-053122_MSD	Groundwater	05/31/22 13:10
S36554.04	MW-06-20_GW-053122	Groundwater	05/31/22 14:35
S36554.05	Trip Blank	Water	05/31/22 00:01
S36554.06	MWF7-02_GW-060122	Groundwater	06/01/22 09:05
S36554.07	MWF16-25_GW-060122	Groundwater	06/01/22 10:10
S36554.08	MWOS-09R_GW-060122	Groundwater	06/01/22 11:05



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36554.01

Sample Tag: MW-07-20_GW-053122

Collected Date/Time: 05/31/2022 13:10

Matrix: Groundwater

COC Reference: 138072

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 03:08, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	15	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	3	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36554.01 (continued)

Sample Tag: MW-07-20_GW-053122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 03:08, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	8	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36554.02

Sample Tag: MW-07-20_GW-053122_MS

Collected Date/Time: 05/31/2022 13:10

Matrix: Groundwater

COC Reference: 138072

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/08/22 23:58, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	36	25		ug/L	1	78-93-3	1
Benzene	53	1		ug/L	1	71-43-2	1
Bromodichloromethane	49	1		ug/L	1	75-27-4	1
Bromoform	48	1		ug/L	1	75-25-2	1
Bromomethane	52	5		ug/L	1	74-83-9	1
Carbon disulfide	61	5		ug/L	1	75-15-0	1
Carbon tetrachloride	47	1		ug/L	1	56-23-5	1
Chlorobenzene	55	1		ug/L	1	108-90-7	1
Chloroethane	51	5		ug/L	1	75-00-3	1
Chloroform	52	1		ug/L	1	67-66-3	1
Chloromethane	52	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	43	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	54	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	45	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	52	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	54	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	54	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	69	1		ug/L	1	156-59-2	1
Dibromochloromethane	51	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	50	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	52	1		ug/L	1	156-60-5	1
Ethylbenzene	54	1		ug/L	1	100-41-4	1
2-Hexanone	Not detected	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	47	5		ug/L	1	1634-04-4	1
Methylene chloride	51	5		ug/L	1	75-09-2	1
Styrene	56	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	52	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	48	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	56	5		ug/L	1	120-82-1	1
Tetrachloroethene	50	1		ug/L	1	127-18-4	1
Toluene	52	1		ug/L	1	108-88-3	1
Trichloroethene	53	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	51	1		ug/L	1	75-69-4	1
Vinyl chloride	53	1		ug/L	1	75-01-4	1

1-Spiked at 50ug/L

**Lab Sample ID: S36554.02 (continued)**

Sample Tag: MW-07-20_GW-053122_MS

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/08/22 23:58, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	55	1		ug/L	1	95-47-6	1
p,m-Xylene*	111	2		ug/L	1		1
Isopropylbenzene	55	1		ug/L	1	98-82-8	1
Cyclohexane	50	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	59	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	49	1		ug/L	1	75-35-4	1
Methyl Acetate	36	10		ug/L	1	79-20-9	1
Methyl cyclohexane	50	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	49	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	48	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	48	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	49	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	45	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36554.03

Sample Tag: MW-07-20_GW-053122_MSD

Collected Date/Time: 05/31/2022 13:10

Matrix: Groundwater

COC Reference: 138072

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 00:22, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	38	25		ug/L	1	78-93-3	1
Benzene	53	1		ug/L	1	71-43-2	1
Bromodichloromethane	50	1		ug/L	1	75-27-4	1
Bromoform	50	1		ug/L	1	75-25-2	1
Bromomethane	53	5		ug/L	1	74-83-9	1
Carbon disulfide	60	5		ug/L	1	75-15-0	1
Carbon tetrachloride	46	1		ug/L	1	56-23-5	1
Chlorobenzene	54	1		ug/L	1	108-90-7	1
Chloroethane	53	5		ug/L	1	75-00-3	1
Chloroform	52	1		ug/L	1	67-66-3	1
Chloromethane	51	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	44	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	54	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	45	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	52	1		ug/L	1	78-87-5	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
cis-1,2-Dichloroethene	69	1		ug/L	1	156-59-2	1
Dibromochloromethane	52	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	49	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	51	1		ug/L	1	156-60-5	1
Ethylbenzene	53	1		ug/L	1	100-41-4	1
2-Hexanone	Not detected	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	49	5		ug/L	1	1634-04-4	1
Methylene chloride	51	5		ug/L	1	75-09-2	1
Styrene	56	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	51	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	49	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	54	5		ug/L	1	120-82-1	1
Tetrachloroethene	50	1		ug/L	1	127-18-4	1
Toluene	52	1		ug/L	1	108-88-3	1
Trichloroethene	54	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	51	1		ug/L	1	75-69-4	1
Vinyl chloride	53	1		ug/L	1	75-01-4	1

1-Spiked at 50ug/L



Lab Sample ID: S36554.03 (continued)

Sample Tag: MW-07-20_GW-053122_MSD

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 00:22, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	54	1		ug/L	1	95-47-6	1
p,m-Xylene*	109	2		ug/L	1		1
Isopropylbenzene	54	1		ug/L	1	98-82-8	1
Cyclohexane	49	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	59	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	46	1		ug/L	1	75-35-4	1
Methyl Acetate	39	10		ug/L	1	79-20-9	1
Methyl cyclohexane	49	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	46	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	49	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	50	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	50	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	46	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36554.04

Sample Tag: MW-06-20_GW-053122

Collected Date/Time: 05/31/2022 14:35

Matrix: Groundwater

COC Reference: 138072

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 03:32, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	9	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Lab Sample ID: S36554.04 (continued)

Sample Tag: MW-06-20_GW-053122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 03:32, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36554.05

Sample Tag: Trip Blank

Collected Date/Time: 05/31/2022 00:01

Matrix: Water

COC Reference: 138072

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 10:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 02:21, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	

**Lab Sample ID: S36554.05 (continued)**

Sample Tag: Trip Blank

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 02:21, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36554.06

Sample Tag: MWF7-02_GW-060122

Collected Date/Time: 06/01/2022 09:05

Matrix: Groundwater

COC Reference: 138072

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 03:56, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	2	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	76	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	77	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	3	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Lab Sample ID: S36554.06 (continued)

Sample Tag: MWF7-02_GW-060122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 03:56, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	13	1		ug/L	1	75-34-3	
1,1-Dichloroethene	11	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36554.07

Sample Tag: MWF16-25_GW-060122

Collected Date/Time: 06/01/2022 10:10

Matrix: Groundwater

COC Reference: 138072

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 04:20, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	3	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	35	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Lab Sample ID: S36554.07 (continued)

Sample Tag: MWF16-25_GW-060122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 04:20, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36554.08

Sample Tag: MWOS-09R_GW-060122

Collected Date/Time: 06/01/2022 11:05

Matrix: Groundwater

COC Reference: 138072

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 04:44, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	28	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	13	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	4	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	

**Lab Sample ID: S36554.08 (continued)**

Sample Tag: MWOS-09R_GW-060122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 04:44, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S36554

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

Project: 30112891.00005 / Racer PNC

Submitted:06/01/2022 13:50 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 3.2
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

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME			
LEXI CRISP; TIFFANY LINDER			
COMPANY			
ARCADIS			
ADDRESS			
28550 CABOT DRIVE #500			
CITY			STATE
NOVI			MI
			ZIP CODE
			48377
PHONE NO.		FAX NO.	PO NO.
614-985-9163		—	—
E-MAIL ADDRESS			QUOTE NO.
LEXI.CRISP@ARCADIS.COM; TIFFANY.LINDER@ARCADIS.COM			

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			
		ACCOUNTSPAYABLE.AMINISTRATION@ARCADIS.COM			

PROJECT NO./NAME 30112891.0000 5 / RACER PNC	SAMPLER(S) - PLEASE PRINT/SIGN NAME CHRISTINA WEAVER / <i>Chr W</i>
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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

<i>Chloride</i>						Certifications
						☐ OHIO VAP ☐ Drinking Water
						☐ DoD ☐ NPDES
						Project Locations
						☐ Detroit ☐ New York
						☐ Other _____
# Containers & Preservatives						Special Instructions
NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	
					OTHER	

[illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Chris Miller</i> / ARCADES	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>J. Miller</i>	6/1/12	11:00
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>J. Miller</i>	6/1/12	13:50
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>M. Miller</i>	6/1/12	13:50

RELINQUISHED BY:				DATE	TIME
SIGNATURE/ORGANIZATION					
RECEIVED BY:				DATE	TIME
SIGNATURE/ORGANIZATION					
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES	TEMP. ON ARRIVAL	3.2
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS			

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

Rev 5.18.12



Report ID: S36661.01(02)
Generated on 06/24/2022
Replaces report S36661.01(01) generated on 06/17/2022

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): S36661.01-S36661.20
Project: 30112891.00005 / Racer PNC
Collected Date(s): 05/31/2022 - 06/02/2022
Submitted Date/Time: 06/03/2022 13:10
Sampled by: Gary Schafer/Christine Weaver
P.O. #: 30112891.00005

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Maya Murshak
Technical Director



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

VOC pH check result corrected.

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
E200.8	EPA Method 200.8 Revision 5.4
E300.0	EPA Method 300.0 Revision 2.1 (1993)
N/A	Not Applicable
RSK-175	RSK-175
SM5310C	Standard Method 5310C 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Sample Summary (20 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36661.01	MW-02-17-GW_053122	Groundwater	05/31/22 13:36
S36661.02	MW-05-18-GW_053122	Groundwater	05/31/22 14:46
S36661.03	Trip Blank	Water	06/01/22 00:01
S36661.04	MW-13-22-GW_060122	Groundwater	06/01/22 14:06
S36661.05	MW-14-22-GW_060122	Groundwater	06/01/22 15:21
S36661.06	MWF16-22-GW_060122	Groundwater	06/01/22 16:46
S36661.07	Trip Blank	Water	06/02/22 00:01
S36661.08	MWF16-05-GW_060222	Groundwater	06/02/22 10:21
S36661.09	MWF16-16-GW_060222	Groundwater	06/02/22 11:46
S36661.10	MWOS-08-GW_060222	Groundwater	06/02/22 13:31
S36661.11	MWOS-10-GW_060222	Groundwater	06/02/22 16:16
S36661.12	DUP-01-GW_060222	Groundwater	06/02/22 00:01
S36661.13	MW-08-21_GW_060122	Groundwater	06/01/22 13:35
S36661.14	MWF16-23_GW_060122	Groundwater	06/01/22 15:10
S36661.15	Trip Blank	Water	06/01/22 00:01
S36661.16	TW-12-22_GW-060222	Groundwater	06/02/22 10:00
S36661.17	MW-09-22_GW-060222	Groundwater	06/02/22 12:05
S36661.18	MWF16-06_GW-060222	Groundwater	06/02/22 13:05
S36661.19	MWF16-18_GW-060222	Groundwater	06/02/22 14:00
S36661.20	DUP-02_GW-060222	Groundwater	06/02/22 00:01



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.01

Sample Tag: MW-02-17-GW_053122

Collected Date/Time: 05/31/2022 13:36

Matrix: Groundwater

COC Reference: 138070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 16:41, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	3	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	5	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Lab Sample ID: S36661.01 (continued)

Sample Tag: MW-02-17-GW_053122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 16:41, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.02

Sample Tag: MW-05-18-GW_053122

Collected Date/Time: 05/31/2022 14:46

Matrix: Groundwater

COC Reference: 138070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 17:05, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	8	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Lab Sample ID: S36661.02 (continued)

Sample Tag: MW-05-18-GW_053122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 17:05, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.03

Sample Tag: Trip Blank

Collected Date/Time: 06/01/2022 00:01

Matrix: Water

COC Reference: 138070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 15:31, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Lab Sample ID: S36661.03 (continued)

Sample Tag: Trip Blank

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 15:31, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.04

Sample Tag: MW-13-22-GW_060122

Collected Date/Time: 06/01/2022 14:06

Matrix: Groundwater

COC Reference: 138070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 11:00, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	45	25	2.6	mg/L	25	14808-79-8	

Method: SM5310C, Run Date: 06/15/22 18:34, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	27.6	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 14:52, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	22.5	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:23, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	22.4	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 17:28, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.04 (continued)

Sample Tag: MW-13-22-GW_060122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 17:28, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Organics

Method: RSK-175, Run Date: 06/10/22 13:38, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.05

Sample Tag: MW-14-22-GW_060122

Collected Date/Time: 06/01/2022 15:21

Matrix: Groundwater

COC Reference: 138070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 11:10, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	57	25	2.6	mg/L	25	14808-79-8	

Method: SM5310C, Run Date: 06/15/22 18:53, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	3.5	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 14:53, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	0.04	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:26, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	0.12	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 17:52, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	2	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.05 (continued)

Sample Tag: MW-14-22-GW_060122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 17:52, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	13	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	67	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	16	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Organics

Method: RSK-175, Run Date: 06/10/22 13:55, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.06

Sample Tag: MWF16-22-GW_060122

Collected Date/Time: 06/01/2022 16:46

Matrix: Groundwater

COC Reference: 138070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 11:20, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	52	25	2.6	mg/L	25	14808-79-8	

Method: SM5310C, Run Date: 06/15/22 19:12, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	3.3	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 14:54, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	0.03	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:27, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	0.24	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 18:15, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.06 (continued)

Sample Tag: MWF16-22-GW_060122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 18:15, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	6	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	69	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	2	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Organics

Method: RSK-175, Run Date: 06/10/22 14:12, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.07

Sample Tag: Trip Blank

Collected Date/Time: 06/02/2022 00:01

Matrix: Water

COC Reference: 138070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	>2	N/A	06/09/22 09:00	JKJ	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 15:55, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	

**Lab Sample ID: S36661.07 (continued)**

Sample Tag: Trip Blank

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 15:55, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.08

Sample Tag: MWF16-05-GW_060222

Collected Date/Time: 06/02/2022 10:21

Matrix: Groundwater

COC Reference: 138070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 11:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	25	25	2.6	mg/L	25	14808-79-8	

Method: SM5310C, Run Date: 06/15/22 19:31, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	3.4	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 14:55, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	Not detected	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:29, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	0.11	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/13/22 18:58, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	1,000		ug/L	20	67-64-1	Y
2-Butanone (MEK)	Not detected	500		ug/L	20	78-93-3	Y
Benzene	Not detected	20		ug/L	20	71-43-2	Y
Bromodichloromethane	Not detected	20		ug/L	20	75-27-4	Y
Bromoform	Not detected	20		ug/L	20	75-25-2	Y
Bromomethane	Not detected	100		ug/L	20	74-83-9	Y
Carbon disulfide	Not detected	100		ug/L	20	75-15-0	Y
Carbon tetrachloride	Not detected	20		ug/L	20	56-23-5	Y
Chlorobenzene	Not detected	20		ug/L	20	108-90-7	Y
Chloroethane	Not detected	100		ug/L	20	75-00-3	Y
Chloroform	Not detected	20		ug/L	20	67-66-3	Y
Chloromethane	Not detected	100		ug/L	20	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	100		ug/L	20	96-12-8	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.08 (continued)

Sample Tag: MWF16-05-GW_060222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/13/22 18:58, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichlorobenzene	Not detected	20		ug/L	20	95-50-1	Y
1,2-Dichloroethane	Not detected	20		ug/L	20	107-06-2	Y
1,2-Dichloropropane	Not detected	20		ug/L	20	78-87-5	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
cis-1,2-Dichloroethene	Not detected	20		ug/L	20	156-59-2	Y
Dibromochloromethane	Not detected	100		ug/L	20	124-48-1	Y
Dichlorodifluoromethane	Not detected	100		ug/L	20	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	20		ug/L	20	156-60-5	Y
Ethylbenzene	Not detected	20		ug/L	20	100-41-4	Y
2-Hexanone	Not detected	1,000		ug/L	20	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	1,000		ug/L	20	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	100		ug/L	20	1634-04-4	Y
Methylene chloride	Not detected	100		ug/L	20	75-09-2	Y
Styrene	Not detected	20		ug/L	20	100-42-5	Y
1,1,1-Trichloroethane	Not detected	20		ug/L	20	71-55-6	Y
1,1,2-Trichloroethane	Not detected	20		ug/L	20	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	100		ug/L	20	120-82-1	Y
Tetrachloroethene	420	20		ug/L	20	127-18-4	Y
Toluene	Not detected	20		ug/L	20	108-88-3	Y
Trichloroethene	Not detected	20		ug/L	20	79-01-6	Y
Trichlorofluoromethane	Not detected	20		ug/L	20	75-69-4	Y
Vinyl chloride	Not detected	20		ug/L	20	75-01-4	Y
o-Xylene	Not detected	20		ug/L	20	95-47-6	Y
p,m-Xylene*	Not detected	40		ug/L	20		Y
Isopropylbenzene	Not detected	20		ug/L	20	98-82-8	Y
Cyclohexane	Not detected	20		ug/L	20	110-82-7	Y
1,1-Dichloroethane	Not detected	20		ug/L	20	75-34-3	Y
1,1-Dichloroethene	Not detected	20		ug/L	20	75-35-4	Y
Methyl Acetate	Not detected	200		ug/L	20	79-20-9	Y
Methyl cyclohexane	Not detected	20		ug/L	20	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	20		ug/L	20	76-13-1	Y
1,2-Dibromoethane	Not detected	20		ug/L	20	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	20		ug/L	20	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-02-6	Y

Organics

Method: RSK-175, Run Date: 06/10/22 14:29, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

Y-Elevated reporting limit due to high target concentration

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.09

Sample Tag: MWF16-16-GW_060222

Collected Date/Time: 06/02/2022 11:46

Matrix: Groundwater

COC Reference: 138070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 11:40, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	42	25	2.6	mg/L	25	14808-79-8	

Method: SM5310C, Run Date: 06/15/22 19:50, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	3.5	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 14:56, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	0.02	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:31, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	0.19	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/13/22 19:21, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	1,000		ug/L	20	67-64-1	Y
2-Butanone (MEK)	Not detected	500		ug/L	20	78-93-3	Y
Benzene	Not detected	20		ug/L	20	71-43-2	Y
Bromodichloromethane	Not detected	20		ug/L	20	75-27-4	Y
Bromoform	Not detected	20		ug/L	20	75-25-2	Y
Bromomethane	Not detected	100		ug/L	20	74-83-9	Y
Carbon disulfide	Not detected	100		ug/L	20	75-15-0	Y
Carbon tetrachloride	Not detected	20		ug/L	20	56-23-5	Y
Chlorobenzene	Not detected	20		ug/L	20	108-90-7	Y
Chloroethane	Not detected	100		ug/L	20	75-00-3	Y
Chloroform	Not detected	20		ug/L	20	67-66-3	Y
Chloromethane	Not detected	100		ug/L	20	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	100		ug/L	20	96-12-8	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.09 (continued)

Sample Tag: MWF16-16-GW_060222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/13/22 19:21, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichlorobenzene	Not detected	20		ug/L	20	95-50-1	Y
1,2-Dichloroethane	Not detected	20		ug/L	20	107-06-2	Y
1,2-Dichloropropane	Not detected	20		ug/L	20	78-87-5	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
cis-1,2-Dichloroethene	20	20		ug/L	20	156-59-2	Y
Dibromochloromethane	Not detected	100		ug/L	20	124-48-1	Y
Dichlorodifluoromethane	Not detected	100		ug/L	20	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	20		ug/L	20	156-60-5	Y
Ethylbenzene	Not detected	20		ug/L	20	100-41-4	Y
2-Hexanone	Not detected	1,000		ug/L	20	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	1,000		ug/L	20	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	100		ug/L	20	1634-04-4	Y
Methylene chloride	Not detected	100		ug/L	20	75-09-2	Y
Styrene	Not detected	20		ug/L	20	100-42-5	Y
1,1,1-Trichloroethane	Not detected	20		ug/L	20	71-55-6	Y
1,1,2-Trichloroethane	Not detected	20		ug/L	20	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	100		ug/L	20	120-82-1	Y
Tetrachloroethene	340	20		ug/L	20	127-18-4	Y
Toluene	Not detected	20		ug/L	20	108-88-3	Y
Trichloroethene	Not detected	20		ug/L	20	79-01-6	Y
Trichlorofluoromethane	Not detected	20		ug/L	20	75-69-4	Y
Vinyl chloride	Not detected	20		ug/L	20	75-01-4	Y
o-Xylene	Not detected	20		ug/L	20	95-47-6	Y
p,m-Xylene*	Not detected	40		ug/L	20		Y
Isopropylbenzene	Not detected	20		ug/L	20	98-82-8	Y
Cyclohexane	Not detected	20		ug/L	20	110-82-7	Y
1,1-Dichloroethane	Not detected	20		ug/L	20	75-34-3	Y
1,1-Dichloroethene	Not detected	20		ug/L	20	75-35-4	Y
Methyl Acetate	Not detected	200		ug/L	20	79-20-9	Y
Methyl cyclohexane	Not detected	20		ug/L	20	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	20		ug/L	20	76-13-1	Y
1,2-Dibromoethane	Not detected	20		ug/L	20	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	20		ug/L	20	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-02-6	Y

Organics

Method: RSK-175, Run Date: 06/10/22 14:46, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

Y-Elevated reporting limit due to high target concentration

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.10

Sample Tag: MWOS-08-GW_060222

Collected Date/Time: 06/02/2022 13:31

Matrix: Groundwater

COC Reference: 138070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	>2	N/A	06/09/22 09:00	JKJ	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 19:26, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	2	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Lab Sample ID: S36661.10 (continued)

Sample Tag: MWOS-08-GW_060222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 19:26, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.11

Sample Tag: MWOS-10-GW_060222

Collected Date/Time: 06/02/2022 16:16

Matrix: Groundwater

COC Reference: 138070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	>2	N/A	06/09/22 09:00	JKJ	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 11:50, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	99	25	2.6	mg/L	25	14808-79-8	

Method: SM5310C, Run Date: 06/15/22 20:09, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	4.0	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 14:57, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	0.08	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:32, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	0.75	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 19:50, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.11 (continued)

Sample Tag: MWOS-10-GW_060222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 19:50, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	9	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Organics

Method: RSK-175, Run Date: 06/10/22 15:03, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.12

Sample Tag: DUP-01-GW_060222

Collected Date/Time: 06/02/2022 00:01

Matrix: Groundwater

COC Reference: 138070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 13:15, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	41	10	1.0	mg/L	10	14808-79-8	

Method: SM5310C, Run Date: 06/15/22 20:28, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	3.6	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 14:58, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	Not detected	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:33, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	Not detected	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/13/22 19:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	1,000		ug/L	20	67-64-1	Y
2-Butanone (MEK)	Not detected	500		ug/L	20	78-93-3	Y
Benzene	Not detected	20		ug/L	20	71-43-2	Y
Bromodichloromethane	Not detected	20		ug/L	20	75-27-4	Y
Bromoform	Not detected	20		ug/L	20	75-25-2	Y
Bromomethane	Not detected	100		ug/L	20	74-83-9	Y
Carbon disulfide	Not detected	100		ug/L	20	75-15-0	Y
Carbon tetrachloride	Not detected	20		ug/L	20	56-23-5	Y
Chlorobenzene	Not detected	20		ug/L	20	108-90-7	Y
Chloroethane	Not detected	100		ug/L	20	75-00-3	Y
Chloroform	Not detected	20		ug/L	20	67-66-3	Y
Chloromethane	Not detected	100		ug/L	20	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	100		ug/L	20	96-12-8	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.12 (continued)

Sample Tag: DUP-01-GW_060222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/13/22 19:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichlorobenzene	Not detected	20		ug/L	20	95-50-1	Y
1,2-Dichloroethane	Not detected	20		ug/L	20	107-06-2	Y
1,2-Dichloropropane	Not detected	20		ug/L	20	78-87-5	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
cis-1,2-Dichloroethene	20	20		ug/L	20	156-59-2	Y
Dibromochloromethane	Not detected	100		ug/L	20	124-48-1	Y
Dichlorodifluoromethane	Not detected	100		ug/L	20	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	20		ug/L	20	156-60-5	Y
Ethylbenzene	Not detected	20		ug/L	20	100-41-4	Y
2-Hexanone	Not detected	1,000		ug/L	20	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	1,000		ug/L	20	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	100		ug/L	20	1634-04-4	Y
Methylene chloride	Not detected	100		ug/L	20	75-09-2	Y
Styrene	Not detected	20		ug/L	20	100-42-5	Y
1,1,1-Trichloroethane	Not detected	20		ug/L	20	71-55-6	Y
1,1,2-Trichloroethane	Not detected	20		ug/L	20	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	100		ug/L	20	120-82-1	Y
Tetrachloroethene	330	20		ug/L	20	127-18-4	Y
Toluene	Not detected	20		ug/L	20	108-88-3	Y
Trichloroethene	Not detected	20		ug/L	20	79-01-6	Y
Trichlorofluoromethane	Not detected	20		ug/L	20	75-69-4	Y
Vinyl chloride	Not detected	20		ug/L	20	75-01-4	Y
o-Xylene	Not detected	20		ug/L	20	95-47-6	Y
p,m-Xylene*	Not detected	40		ug/L	20		Y
Isopropylbenzene	Not detected	20		ug/L	20	98-82-8	Y
Cyclohexane	Not detected	20		ug/L	20	110-82-7	Y
1,1-Dichloroethane	Not detected	20		ug/L	20	75-34-3	Y
1,1-Dichloroethene	Not detected	20		ug/L	20	75-35-4	Y
Methyl Acetate	Not detected	200		ug/L	20	79-20-9	Y
Methyl cyclohexane	Not detected	20		ug/L	20	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	20		ug/L	20	76-13-1	Y
1,2-Dibromoethane	Not detected	20		ug/L	20	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	20		ug/L	20	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-02-6	Y

Organics

Method: RSK-175, Run Date: 06/10/22 15:36, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

Y-Elevated reporting limit due to high target concentration

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.13

Sample Tag: MW-08-21_GW_060122

Collected Date/Time: 06/01/2022 13:35

Matrix: Groundwater

COC Reference: 150911

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 13:27, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	153	10	1.0	mg/L	10	14808-79-8	

Method: SM5310C, Run Date: 06/15/22 20:47, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	4.4	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 14:59, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	Not detected	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:33, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	0.03	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 20:36, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.13 (continued)

Sample Tag: MW-08-21_GW_060122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 20:36, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	3	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	9	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	3	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Organics

Method: RSK-175, Run Date: 06/10/22 15:53, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.14

Sample Tag: MWF16-23_GW_060122

Collected Date/Time: 06/01/2022 15:10

Matrix: Groundwater

COC Reference: 150911

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	>2	N/A	06/09/22 09:00	JKJ	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 13:38, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	45	10	1.0	mg/L	10	14808-79-8	

Method: SM5310C, Run Date: 06/15/22 21:07, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	3.5	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 15:00, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	Not detected	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:34, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	0.29	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 20:59, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.14 (continued)

Sample Tag: MWF16-23_GW_060122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 20:59, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	5	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	16	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Organics

Method: RSK-175, Run Date: 06/10/22 16:10, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.15

Sample Tag: Trip Blank

Collected Date/Time: 06/01/2022 00:01

Matrix: Water

COC Reference: 150911

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 16:18, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Lab Sample ID: S36661.15 (continued)

Sample Tag: Trip Blank

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 16:18, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.16

Sample Tag: TW-12-22_GW-060222

Collected Date/Time: 06/02/2022 10:00

Matrix: Groundwater

COC Reference: 150911

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 13:48, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	60	10	1.0	mg/L	10	14808-79-8	

Method: SM5310C, Run Date: 06/15/22 21:26, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	2.8	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 15:00, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	0.40	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:40, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	0.41	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 21:23, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	7	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.16 (continued)

Sample Tag: TW-12-22_GW-060222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 21:23, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	85	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	3	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	7	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	9	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Organics

Method: RSK-175, Run Date: 06/10/22 16:27, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.17

Sample Tag: MW-09-22_GW-060222

Collected Date/Time: 06/02/2022 12:05

Matrix: Groundwater

COC Reference: 150911

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 13:58, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	39	10	1.0	mg/L	10	14808-79-8	

Method: SM5310C, Run Date: 06/16/22 12:50, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	3.6	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 15:05, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	0.02	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:35, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	0.22	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/13/22 20:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	500		ug/L	10	67-64-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S36661.17 (continued)

Sample Tag: MW-09-22_GW-060222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/13/22 20:08, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	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
cis-1,2-Dichloroethene	Not detected	10		ug/L	10	156-59-2	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
Tetrachloroethene	150	10		ug/L	10	127-18-4	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
Trichloroethene	Not detected	10		ug/L	10	79-01-6	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
Isopropylbenzene	Not detected	10		ug/L	10	98-82-8	Y
Cyclohexane	Not detected	10		ug/L	10	110-82-7	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y

Organics

Method: RSK-175, Run Date: 06/10/22 16:44, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

Y-Elevated reporting limit due to high target concentration

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.18

Sample Tag: MWF16-06_GW-060222

Collected Date/Time: 06/02/2022 13:05

Matrix: Groundwater

COC Reference: 150911

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 13:58, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	56	10	0.59	mg/L	10	14808-79-8	

Method: SM5310C, Run Date: 06/16/22 13:10, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	3.7	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 15:06, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	Not detected	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:40, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	0.15	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 22:09, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	9	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	17	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.18 (continued)

Sample Tag: MWF16-06_GW-060222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 22:09, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichloroethane	2	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	53	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	134	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	66	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	10	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	133	1		ug/L	1	75-34-3	
1,1-Dichloroethene	12	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Organics

Method: RSK-175, Run Date: 06/10/22 17:01, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.19

Sample Tag: MWF16-18_GW-060222

Collected Date/Time: 06/02/2022 14:00

Matrix: Groundwater

COC Reference: 150911

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 14:10, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	79	10	0.59	mg/L	10	14808-79-8	

Method: SM5310C, Run Date: 06/16/22 13:29, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	9.4	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 15:07, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	Not detected	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:41, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	Not detected	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 22:33, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	500		ug/L	10	67-64-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.19 (continued)

Sample Tag: MWF16-18_GW-060222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/09/22 22:33, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	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
cis-1,2-Dichloroethene	70	10		ug/L	10	156-59-2	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
Tetrachloroethene	930	10		ug/L	10	127-18-4	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
Isopropylbenzene	Not detected	10		ug/L	10	98-82-8	Y
Cyclohexane	Not detected	10		ug/L	10	110-82-7	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y

Organics

Method: RSK-175, Run Date: 06/10/22 17:18, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

Y-Elevated reporting limit due to high target concentration

O-Analysis performed by outside laboratory. See attached report.



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.20

Sample Tag: DUP-02_GW-060222

Collected Date/Time: 06/02/2022 00:01

Matrix: Groundwater

COC Reference: 150911

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
6	40ml Glass	HCL	Yes	3.6	IR
2	125ml Plastic	HNO3	Yes	3.6	IR
1	250ml Plastic	None	Yes	3.6	IR
2	40ml Glass	H2SO4	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	
Metal Digestion	Completed	SW3015A	06/12/22 13:00	CCM	
Metal Digestion	Completed	SW3015A	06/12/22 13:30	CCM	

Inorganics

Method: E300.0, Run Date: 06/07/22 14:23, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	79	10	0.59	mg/L	10	14808-79-8	

Method: SM5310C, Run Date: 06/16/22 13:48, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
TOC	9.3	1		mg/L	1		

Metals

Method: E200.8, Run Date: 06/12/22 15:08, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron, Dissolved	Not detected	0.02		mg/L	5	7439-89-6	

Method: E200.8, Run Date: 06/12/22 14:42, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Iron	Not detected	0.02		mg/L	5	7439-89-6	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/14/22 14:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	500		ug/L	10	67-64-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Revised Report

Lab Sample ID: S36661.20 (continued)

Sample Tag: DUP-02_GW-060222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 06/14/22 14:42, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	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
cis-1,2-Dichloroethene	80	10		ug/L	10	156-59-2	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
Tetrachloroethene	1,090	10		ug/L	10	127-18-4	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
Isopropylbenzene	Not detected	10		ug/L	10	98-82-8	Y
Cyclohexane	Not detected	10		ug/L	10	110-82-7	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y

Organics

Method: RSK-175, Run Date: 06/10/22 17:35, Analyst: TA

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dissolved Gases*	Completed				1		O

Y-Elevated reporting limit due to high target concentration

O-Analysis performed by outside laboratory. See attached report.

Merit Laboratories Login Checklist

Lab Set ID:S36661

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

Project: 30112891.00005 / Racer PNC

Submitted:06/03/2022 13:10 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 3.6
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: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S36661 Submitted: 06/03/2022 13:10

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

Project: 30112891.00005 / Racer PNC

Initial Preservation Check: 06/03/2022 14:01 PFD

Preservation Recheck (E200.8): N/A

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

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S36661.04	125ml Plastic HNO3	<2			
S36661.04	125ml Plastic HNO3	<2			
S36661.05	125ml Plastic HNO3	<2			
S36661.05	125ml Plastic HNO3	<2			
S36661.06	125ml Plastic HNO3	<2			
S36661.06	125ml Plastic HNO3	<2			
S36661.08	125ml Plastic HNO3	<2			
S36661.08	125ml Plastic HNO3	<2			
S36661.09	125ml Plastic HNO3	<2			
S36661.09	125ml Plastic HNO3	<2			
S36661.11	125ml Plastic HNO3	<2			
S36661.11	125ml Plastic HNO3	<2			
S36661.12	125ml Plastic HNO3	<2			
S36661.12	125ml Plastic HNO3	<2			
S36661.13	125ml Plastic HNO3	<2			
S36661.13	125ml Plastic HNO3	<2			
S36661.14	125ml Plastic HNO3	<2			
S36661.14	125ml Plastic HNO3	<2			
S36661.16	125ml Plastic HNO3	<2			
S36661.16	125ml Plastic HNO3	<2			
S36661.17	125ml Plastic HNO3	<2			
S36661.17	125ml Plastic HNO3	<2			
S36661.18	125ml Plastic HNO3	<2			
S36661.18	125ml Plastic HNO3	<2			
S36661.19	125ml Plastic HNO3	<2			
S36661.19	125ml Plastic HNO3	<2			
S36661.20	125ml Plastic HNO3	<2			
S36661.20	125ml Plastic HNO3	<2			



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

C.O.C. PAGE # _____ OF _____

138070

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME <i>Lexi Crisp / Tiffany Linder</i>			
COMPANY <i>Aracdis</i>			
ADDRESS <i>28550 Cabot Dr. Suite 500</i>			
CITY <i>Novi</i>	STATE <i>MI</i>	ZIP CODE <i>48327</i>	
PHONE NO. <i>614-985-9163</i>	FAX NO.	P.O. NO.	
E-MAIL ADDRESS <i>Lexi.Crisp@aracdis.com / Tiffany.Linder@aracdis.com</i>		QUOTE NO.	

CONTACT NAME		☐ SAME
COMPANY		
ADDRESS		
CITY	STATE	ZIP CODE
PHONE NO.	E-MAIL ADDRESS	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME <i>30112891.00005 / Racer PNC</i>	SAMPLER(S) - PLEASE PRINT/SIGN NAME <i>Gary Schaefer / Gary Schaefer</i>
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	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID	
	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR	W=WASTE

# Containers & Preservatives	Sub Specific Vials	Total Iron	Dissolved Iron	Sulfate	Dissolved Gases	Total Organic Carbon	Certifications
							☐ OHIO VAP ☐ Drinking Water
							☐ DoD ☐ NPDES
							Project Locations
							☐ Detroit ☐ New York
							☐ Other
							Special Instructions

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER
	DATE	TIME										
366661.01	5/31/22	1336	MW-02-17-GW-053122	GW	3		3					
02	5/31/22	1446	MW-05-18-GW-053122	GW	3		3					
03	6/1/22		Trip Blank									
04	6/1/22	14:06	MW-13-22-GW-060122	GW	11	1	6	2	2			
05	6/1/22	15:21	MW-14-22-GW-060122	GW	11	1	6	2	2			
06	6/1/22	16:46	MWF16-22-GW-060122	GW	11	1	6	2	2			
07	6/2/22		Trip Blank									
08	6/2/22	10:21	MWF16-05-GW-060222	GW	11	1	6	2	2			
09	6/2/22	11:46	MWF16-16-GW-060222	GW	11	1	6	2	2			
10	6/2/22	13:31	MW05-08-GW-060222	GW	3		3					
11	6/2/22	16:16	MW05-10-GW-060222	GW	11	1	6	2	2			
12	6/2/22		DUP-01-GW-060222		11	1	6	2	2			

RELINQUISHED BY: SIGNATURE/ORGANIZATION <i>Gary Schaefer</i>	DATE <i>6/03/22</i>	TIME <i>11:52</i>
RECEIVED BY: SIGNATURE/ORGANIZATION <i>J. Waller</i>	DATE <i>6/3/22</i>	TIME <i>11:22</i>
RELINQUISHED BY: SIGNATURE/ORGANIZATION <i>J. Waller</i>	DATE <i>6/3/22</i>	TIME <i>13:10</i>
RECEIVED BY: SIGNATURE/ORGANIZATION <i>Shanna Murray</i>	DATE <i>6/3/22</i>	TIME <i>13:10</i>

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 <i>3.6</i>

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

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME LEXI CRISP ; TIFFANY LINDER			
COMPANY ARCADES			
ADDRESS 28550 CABOT DRIVE #500			
CITY NOW		STATE MI	ZIP CODE 48377
PHONE NO. 614-985-9163		CELL NO. —	P.O. NO. —
E-MAIL ADDRESS LEXI.CRISP@ARCADES.COM, TIFFANY.LINDER@ARCADES.COM		QUOTE NO. —	

CONTACT NAME		ACCOUNTS PAYABLE		☐ SAME	
COMPANY		ARCAOIS			
ADDRESS		630 PLAZA DRIVE # 600			
CITY		HIGHLANDS RANCH		STATE	ZIP CODE
				CO	80129
PHONE NO.		E-MAIL ADDRESS			
		ACCOUNTSPAYABLE.ADMINISTRATIVE@ARCAOIS.COM			

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME 3012891.00005 / RACER PNC	SAMPLER(S) - PLEASE PRINT/SIGN NAME CHRISTINA WEAVER / <i>Christina Weaver</i>
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=WPE A=AIR WS=WASTE

NONE HCl HNO ₃ H ₂ SO ₄ NaOH MeOH OTHER		# Containers & Preservatives	1 Container	4 STATE SPECIFIC VOC'S	TOTAL IRON DISSOLVED IRON (FERRIC) SULFATE DISSOLVED GASES TOTAL ORGANIC CARBON	Certifications ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES Project Locations ☐ Detroit ☐ New York ☐ Other _____ Special Instructions

[illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Chris Williams</i> / ARCADIS	☒ Sampler	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>Yang Achraf</i>		6/2/22	17:00
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Yang Achraf</i>		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>Yang Achraf</i>		4/2/22	17:00
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Yang Achraf</i>		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>Yang Achraf</i>		6/3/22	11:52
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Yang Achraf</i>		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>Yang Achraf</i>		6/3/22	11:52

RELINQUISHED BY:		SIGNATURE/ORGANIZATION		DATE		TIME	
		<i>J. H. Miller</i>		6/3/82		12:10	
RECEIVED BY:		SIGNATURE/ORGANIZATION		DATE		TIME	
		<i>Johnnie May</i>		6/2/82		13:10	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL _____			
				3.6			
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: S40556.01(01)
Generated on 09/29/2022

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

Report Summary

Lab Sample ID(s): S40556.01-S40556.14
Project: Racer PNC / 30112891.00005
Collected Date(s): 09/20/2022 - 09/21/2022
Submitted Date/Time: 09/21/2022 14:10
Sampled by: Sommer Guy
P.O. #: 30112891.00005

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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
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs



Analytical Laboratory Report

Sample Summary (14 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40556.01	UNKNOWN-01_GW-092022	Groundwater	09/20/22 09:30
S40556.02	MWF7-02_GW-092022	Groundwater	09/20/22 10:35
S40556.03	MWF7-02_GW-092022 MS	Groundwater	09/20/22 10:35
S40556.04	MWF7-02_GW-092022 MSD	Groundwater	09/20/22 10:35
S40556.05	MWF7-03_GW-092022	Groundwater	09/20/22 11:45
S40556.06	MW-05-18_GW-092022	Groundwater	09/20/22 12:55
S40556.07	MW-07-20_GW-092022	Groundwater	09/20/22 13:50
S40556.08	MW-02-17_GW-092022	Groundwater	09/20/22 15:45
S40556.09	tripblank_52	Water	09/20/22 00:01
S40556.10	MWF12-02R_GW-092122	Groundwater	09/21/22 10:05
S40556.11	MWF12-02R_GW-092122	Groundwater	09/21/22 10:05
S40556.12	DUP-04_GW-092122	Groundwater	09/21/22 00:01
S40556.13	DUP-04_GW-092122	Groundwater	09/21/22 00:01
S40556.14	MWF16-15_GW-092122	Groundwater	09/21/22 11:20



Analytical Laboratory Report

Lab Sample ID: S40556.01

Sample Tag: UNKNOWN-01_GW-092022

Collected Date/Time: 09/20/2022 09:30

Matrix: Groundwater

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/26/22 15:30	JKJ	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 09:13, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	66	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	41	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40556.01 (continued)
Sample Tag: UNKNOWN-01_GW-092022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 09:13, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40556.02

Sample Tag: MWF7-02_GW-092022

Collected Date/Time: 09/20/2022 10:35

Matrix: Groundwater

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/26/22 14:30	JKJ	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/23/22 18:40, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	201	1		ug/L	1	123-91-1	E

Method: SW8260B - SIM, Run Date: 09/26/22 20:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane (Replicate 01)*	210	10		ug/L	10		Y

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 08:50, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	1	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	1	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	2	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	

E-Concentration exceeds calibration range

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S40556.02 (continued)

Sample Tag: MWF7-02_GW-092022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 08:50, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	115	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	1	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	115	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	5	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	12	1		ug/L	1	75-34-3	
1,1-Dichloroethene	15	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40556.03

Sample Tag: MWF7-02_GW-092022 MS

Collected Date/Time: 09/20/2022 10:35

Matrix: Groundwater

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/26/22 14:30	JKJ	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/23/22 17:18, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	255	1		ug/L	1	123-91-1	1E

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 06:05, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	78	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	64	25		ug/L	1	78-93-3	1
Benzene	55	1		ug/L	1	71-43-2	1
Bromodichloromethane	58	1		ug/L	1	75-27-4	1
Bromoform	61	1		ug/L	1	75-25-2	1
Bromomethane	56	5		ug/L	1	74-83-9	1
Carbon disulfide	53	5		ug/L	1	75-15-0	1
Carbon tetrachloride	56	1		ug/L	1	56-23-5	1
Chlorobenzene	57	1		ug/L	1	108-90-7	1
Chloroethane	53	5		ug/L	1	75-00-3	1
Chloroform	57	1		ug/L	1	67-66-3	1
Chloromethane	56	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	57	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	54	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	57	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	56	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	53	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	54	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	58	1		ug/L	1	156-59-2	1
Dibromochloromethane	59	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	45	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	53	1		ug/L	1	156-60-5	1
Ethylbenzene	55	1		ug/L	1	100-41-4	1
2-Hexanone	61	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	56	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	53	5		ug/L	1	1634-04-4	1
Methylene chloride	55	5		ug/L	1	75-09-2	1
Styrene	56	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	160	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	59	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	47	5		ug/L	1	120-82-1	1
Tetrachloroethene	164	1		ug/L	1	127-18-4	1

1-Spiked at 50ug/L E-Concentration exceeds calibration range



Analytical Laboratory Report

Lab Sample ID: S40556.03 (continued)

Sample Tag: MWF7-02_GW-092022 MS

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 06:05, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Toluene	53	1		ug/L	1	108-88-3	1
Trichloroethene	59	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	55	1		ug/L	1	75-69-4	1
Vinyl chloride	52	1		ug/L	1	75-01-4	1
o-Xylene	56	1		ug/L	1	95-47-6	1
p,m-Xylene*	111	2		ug/L	1		1
Isopropylbenzene	55	1		ug/L	1	98-82-8	1
Cyclohexane	49	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	65	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	66	1		ug/L	1	75-35-4	1
Methyl Acetate	47	10		ug/L	1	79-20-9	1
Methyl cyclohexane	43	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	50	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	59	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	59	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	56	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	56	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S40556.04

Sample Tag: MWF7-02_GW-092022 MSD

Collected Date/Time: 09/20/2022 10:35

Matrix: Groundwater

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/26/22 14:30	JKJ	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/23/22 17:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	284	1		ug/L	1	123-91-1	1E

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 06:28, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	75	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	63	25		ug/L	1	78-93-3	1
Benzene	52	1		ug/L	1	71-43-2	1
Bromodichloromethane	55	1		ug/L	1	75-27-4	1
Bromoform	58	1		ug/L	1	75-25-2	1
Bromomethane	52	5		ug/L	1	74-83-9	1
Carbon disulfide	50	5		ug/L	1	75-15-0	1
Carbon tetrachloride	53	1		ug/L	1	56-23-5	1
Chlorobenzene	54	1		ug/L	1	108-90-7	1
Chloroethane	50	5		ug/L	1	75-00-3	1
Chloroform	54	1		ug/L	1	67-66-3	1
Chloromethane	52	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	56	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	52	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	54	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	53	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	51	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	51	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	55	1		ug/L	1	156-59-2	1
Dibromochloromethane	57	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	42	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	51	1		ug/L	1	156-60-5	1
Ethylbenzene	52	1		ug/L	1	100-41-4	1
2-Hexanone	58	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	54	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	51	5		ug/L	1	1634-04-4	1
Methylene chloride	53	5		ug/L	1	75-09-2	1
Styrene	54	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	153	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	56	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	46	5		ug/L	1	120-82-1	1
Tetrachloroethene	155	1		ug/L	1	127-18-4	1

1-Spiked at 50ug/L E-Concentration exceeds calibration range



Analytical Laboratory Report

Lab Sample ID: S40556.04 (continued)

Sample Tag: MWF7-02_GW-092022 MSD

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 06:28, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Toluene	50	1		ug/L	1	108-88-3	1
Trichloroethene	56	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	53	1		ug/L	1	75-69-4	1
Vinyl chloride	48	1		ug/L	1	75-01-4	1
o-Xylene	53	1		ug/L	1	95-47-6	1
p,m-Xylene*	105	2		ug/L	1		1
Isopropylbenzene	52	1		ug/L	1	98-82-8	1
Cyclohexane	46	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	62	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	62	1		ug/L	1	75-35-4	1
Methyl Acetate	45	10		ug/L	1	79-20-9	1
Methyl cyclohexane	40	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	47	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	56	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	56	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	53	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	53	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S40556.05

Sample Tag: MWVF7-03_GW-092022

Collected Date/Time: 09/20/2022 11:45

Matrix: Groundwater

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/26/22 15:30	JKJ	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 09:37, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40556.05 (continued)
Sample Tag: MWF7-03_GW-092022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 09:37, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40556.06

Sample Tag: MW-05-18_GW-092022

Collected Date/Time: 09/20/2022 12:55

Matrix: Groundwater

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/26/22 14:30	JKJ	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/26/22 20:22, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 10:01, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	11	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	7	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	



Analytical Laboratory Report

Lab Sample ID: S40556.06 (continued)

Sample Tag: MW-05-18_GW-092022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 10:01, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	1	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40556.07

Sample Tag: MW-07-20_GW-092022

Collected Date/Time: 09/20/2022 13:50

Matrix: Groundwater

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/26/22 15:30	JKJ	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 10:25, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	9	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	2	1		ug/L	1	79-01-6	
Trichlorofluoromethane	2	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40556.07 (continued)
Sample Tag: MW-07-20_GW-092022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 10:25, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40556.08
Sample Tag: MW-02-17_GW-092022
Collected Date/Time: 09/20/2022 15:45
Matrix: Groundwater
COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	n/a	n/a	No	n/a	n/a

Other / Misc.

Method: , Run Date: 09/22/22 10:49, Analyst: JRM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
No Analyses*	Completed				1		



Analytical Laboratory Report

Lab Sample ID: S40556.09

Sample Tag: tripblank_52

Collected Date/Time: 09/20/2022 00:01

Matrix: Water

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/26/22 15:30	JKJ	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 08:26, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40556.09 (continued)

Sample Tag: tripblank_52

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 08:26, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40556.10

Sample Tag: MWF12-02R_GW-092122

Collected Date/Time: 09/21/2022 10:05

Matrix: Groundwater

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/26/22 15:30	JKJ	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 10:48, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40556.10 (continued)
Sample Tag: MWF12-02R_GW-092122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 10:48, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40556.11

Sample Tag: MWF12-02R_GW-092122

Collected Date/Time: 09/21/2022 10:05

Matrix: Groundwater

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/26/22 13:23	CTV	
Metal Digestion	Completed	SW3015A	09/23/22 10:20	CCM	

Metals

Method: E200.8, Run Date: 09/23/22 12:28, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony*	Not detected	0.005		mg/L	5	7440-36-0	
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Barium	0.054	0.005		mg/L	5	7440-39-3	
Beryllium	Not detected	0.001		mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005		mg/L	5	7440-43-9	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt	Not detected	0.005		mg/L	5	7440-48-4	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Manganese	0.256	0.005		mg/L	5	7439-96-5	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Selenium	Not detected	0.005		mg/L	5	7782-49-2	
Silver	Not detected	0.0005		mg/L	5	7440-22-4	
Thallium	Not detected	0.002		mg/L	5	7440-28-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	
Zinc	Not detected	0.005		mg/L	5	7440-66-6	

Method: E245.1, Run Date: 09/26/22 15:19, Analyst: CTV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	



Analytical Laboratory Report

Lab Sample ID: S40556.12

Sample Tag: DUP-04_GW-092122

Collected Date/Time: 09/21/2022 00:01

Matrix: Groundwater

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	09/26/22 13:23	CTV	
Metal Digestion	Completed	SW3015A	09/23/22 10:20	CCM	

Metals

Method: E200.8, Run Date: 09/23/22 12:31, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony*	Not detected	0.005		mg/L	5	7440-36-0	
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Barium	0.052	0.005		mg/L	5	7440-39-3	
Beryllium	Not detected	0.001		mg/L	5	7440-41-7	
Cadmium	Not detected	0.0005		mg/L	5	7440-43-9	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Cobalt	Not detected	0.005		mg/L	5	7440-48-4	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Manganese	0.252	0.005		mg/L	5	7439-96-5	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Selenium	Not detected	0.005		mg/L	5	7782-49-2	
Silver	Not detected	0.0005		mg/L	5	7440-22-4	
Thallium	Not detected	0.002		mg/L	5	7440-28-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	
Zinc	Not detected	0.005		mg/L	5	7440-66-6	

Method: E245.1, Run Date: 09/26/22 15:22, Analyst: CTV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	



Analytical Laboratory Report

Lab Sample ID: S40556.13

Sample Tag: DUP-04_GW-092122

Collected Date/Time: 09/21/2022 00:01

Matrix: Groundwater

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/26/22 15:30	JKJ	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 11:12, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40556.13 (continued)

Sample Tag: DUP-04_GW-092122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 11:12, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40556.14

Sample Tag: MWF16-15_GW-092122

Collected Date/Time: 09/21/2022 11:20

Matrix: Groundwater

COC Reference: 157360

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/26/22 15:30	JKJ	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 11:36, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	5	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	11	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	3	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40556.14 (continued)
Sample Tag: MWF16-15_GW-092122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/25/22 11:36, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S40556

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

Project: Racer PNC / 30112891.00005

Submitted:09/21/2022 14:10 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 3.2
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	Sample .13 not present
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: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S40556 Submitted: 09/21/2022 14:10

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

Project: Racer PNC / 30112891.00005

Initial Preservation Check: 09/21/2022 16:25 MMC

Preservation Recheck (E200.8): N/A

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

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S40556.11	125ml Plastic HNO3	<2			
S40556.12	125ml Plastic HNO3	<2			

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME			
Tiffany Linder			
COMPANY			
Arcadis			
ADDRESS			
28550 Cabot Dr #500			
CITY		STATE	ZIP CODE
Novi		MI	48377
PHONE NO		CELL NO	
248 994 2240			
E-MAIL ADDRESS		QUOTE NO	

CONTACT NAME		☐ SAME	
COMPANY			
ADDRESS			
CITY		STATE	ZIP CODE
PHONE NO.		E-MAIL ADDRESS	
ANALYSIS OF ATTACH LIST IF MORE SPACE IS REQUIRED)			

PROJECT NO./NAME	30112891.00005	SAMPLER(S) - PLEASE PRINT/SIGN NAME	Summer 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	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

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	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER							Other _____		
	DATE	TIME																	Site Sp.	Metho.	8260
40556.01	9/20/22	0930	UNKNOWN-01_GW-092022	GW	3		X						X	SC							
02/03/04	9/20/22	1035	MWF7-02_GW-092022	GW	9		X						X	SC	X						Run MS/MSD
.05	9/20/22	1145	MWF7-03_GW-092022	GW	3		X						X								
.06	9/20/22	1255	MW-05-18_GW-092022	GW	3		X						X		X						
.07	9/20/22	1350	MW-07-20_GW-092022	GW	3		X						X								
.08	9/20/22	1545	MW-02-17_GW-092022	GW	3		X						X		X						
.09	—	—	tripblank_52	W	1		X						X								
.10	9/21/22	1005	MWF12-02R_GW-092122	GW	3		X						X								
.11	9/21/22	1005	MWF12-02R_GW-092122	GW	1			X								X					
.12	9/21/22	—	DUP-04_GW-092122	GW	1			X								X					
.13	9/21/22	—	DUP-04_GW-092122	GW	3		X						X								
.14	9/21/22	1120	MWF16-15_GW-092122	GW	3		X						X								

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Summer Shyne Arcadis	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	John Smith	9/21/22	12:45
RELINQUISHED BY: SIGNATURE/ORGANIZATION	John Smith	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	John Smith	9/21/22	14:00
RELINQUISHED BY: SIGNATURE/ORGANIZATION	John Smith	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	John Smith	9/21/22	14:00

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES	TEMP. ON ARRIVAL <u>3.2</u>
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		



Analytical Laboratory Report

Report ID: S40606.01(01)
Generated on 09/30/2022

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): S40606.01-S40606.06
Project: 30112891.00005 / Racer PNC
Collected Date(s): 09/21/2022 - 09/22/2022
Submitted Date/Time: 09/22/2022 16:00
Sampled by: Sommer Guy
P.O. #: 30112891.00005

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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 (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40606.01	MW-13-22_GW-092122	Groundwater	09/21/22 13:20
S40606.02	MW-14-22_GW-092122	Groundwater	09/21/22 14:25
S40606.03	MWF8-01_GW-092222	Groundwater	09/22/22 09:00
S40606.04	tripblank_53	Water	09/22/22 00:01
S40606.05	MWF16-16_GW-092222	Groundwater	09/22/22 10:00
S40606.06	DUP-03_GW-092222	Groundwater	09/22/22 00:01



Analytical Laboratory Report

Lab Sample ID: S40606.01

Sample Tag: MW-13-22_GW-092122

Collected Date/Time: 09/21/2022 13:20

Matrix: Groundwater

COC Reference: 157354

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 01:21, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40606.01 (continued)

Sample Tag: MW-13-22_GW-092122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 01:21, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40606.02

Sample Tag: MW-14-22_GW-092122

Collected Date/Time: 09/21/2022 14:25

Matrix: Groundwater

COC Reference: 157354

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 01:45, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	2	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	12	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	10	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	89	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	19	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40606.02 (continued)

Sample Tag: MW-14-22_GW-092122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 01:45, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40606.03

Sample Tag: MWF8-01_GW-092222

Collected Date/Time: 09/22/2022 09:00

Matrix: Groundwater

COC Reference: 157354

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 02:08, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	1	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40606.03 (continued)
Sample Tag: MWF8-01_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 02:08, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40606.04

Sample Tag: tripblank_53

Collected Date/Time: 09/22/2022 00:01

Matrix: Water

COC Reference: 157354

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 23:47, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40606.04 (continued)

Sample Tag: tripblank_53

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 23:47, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40606.05

Sample Tag: MWF16-16_GW-092222

Collected Date/Time: 09/22/2022 10:00

Matrix: Groundwater

COC Reference: 157354

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 02:32, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	1,000		ug/L	20	67-64-1	Y
2-Butanone (MEK)	Not detected	500		ug/L	20	78-93-3	Y
Benzene	Not detected	20		ug/L	20	71-43-2	Y
Bromodichloromethane	Not detected	20		ug/L	20	75-27-4	Y
Bromoform	Not detected	20		ug/L	20	75-25-2	Y
Bromomethane	Not detected	100		ug/L	20	74-83-9	Y
Carbon disulfide	Not detected	100		ug/L	20	75-15-0	Y
Carbon tetrachloride	Not detected	20		ug/L	20	56-23-5	Y
Chlorobenzene	Not detected	20		ug/L	20	108-90-7	Y
Chloroethane	Not detected	100		ug/L	20	75-00-3	Y
Chloroform	Not detected	20		ug/L	20	67-66-3	Y
Chloromethane	Not detected	100		ug/L	20	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	100		ug/L	20	96-12-8	Y
1,2-Dichlorobenzene	Not detected	20		ug/L	20	95-50-1	Y
1,2-Dichloroethane	Not detected	20		ug/L	20	107-06-2	Y
1,2-Dichloropropane	Not detected	20		ug/L	20	78-87-5	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
cis-1,2-Dichloroethene	Not detected	20		ug/L	20	156-59-2	Y
Dibromochloromethane	Not detected	100		ug/L	20	124-48-1	Y
Dichlorodifluoromethane	Not detected	100		ug/L	20	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	20		ug/L	20	156-60-5	Y
Ethylbenzene	Not detected	20		ug/L	20	100-41-4	Y
2-Hexanone	Not detected	1,000		ug/L	20	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	1,000		ug/L	20	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	100		ug/L	20	1634-04-4	Y
Methylene chloride	Not detected	100		ug/L	20	75-09-2	Y
Styrene	Not detected	20		ug/L	20	100-42-5	Y
1,1,1-Trichloroethane	Not detected	20		ug/L	20	71-55-6	Y
1,1,2-Trichloroethane	Not detected	20		ug/L	20	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	100		ug/L	20	120-82-1	Y
Tetrachloroethene	380	20		ug/L	20	127-18-4	Y
Toluene	Not detected	20		ug/L	20	108-88-3	Y
Trichloroethene	Not detected	20		ug/L	20	79-01-6	Y
Trichlorofluoromethane	Not detected	20		ug/L	20	75-69-4	Y
Vinyl chloride	Not detected	20		ug/L	20	75-01-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S40606.05 (continued)

Sample Tag: MWF16-16_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 02:32, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	20		ug/L	20	95-47-6	Y
p,m-Xylene*	Not detected	40		ug/L	20		Y
Isopropylbenzene	Not detected	20		ug/L	20	98-82-8	Y
Cyclohexane	Not detected	20		ug/L	20	110-82-7	Y
1,1-Dichloroethane	Not detected	20		ug/L	20	75-34-3	Y
1,1-Dichloroethene	Not detected	20		ug/L	20	75-35-4	Y
Methyl Acetate	Not detected	200		ug/L	20	79-20-9	Y
Methyl cyclohexane	Not detected	20		ug/L	20	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	20		ug/L	20	76-13-1	Y
1,2-Dibromoethane	Not detected	20		ug/L	20	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	20		ug/L	20	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-02-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S40606.06

Sample Tag: DUP-03_GW-092222

Collected Date/Time: 09/22/2022 00:01

Matrix: Groundwater

COC Reference: 157354

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 16:33, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40606.06 (continued)

Sample Tag: DUP-03_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 16:33, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S40606

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

Project: 30112891.00005 / Racer PNC

Submitted:09/22/2022 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 3.5
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 _____

157354

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME <u>Tiffany Linder</u>			
COMPANY <u>Arcadis</u>			
ADDRESS <u>28550 Cabot Dr #500</u>			
CITY <u>Novi</u>	STATE <u>MI</u>	ZIP CODE <u>48317</u>	
PHONE NO. <u>248 994 2240</u>	CELL NO.	P.O. NO.	
E-MAIL ADDRESS <u>Tiffany.linder@arcadis.com</u>		QUOTE NO.	

CONTACT NAME		☐ SAME
COMPANY		
ADDRESS		
CITY	STATE	ZIP CODE
PHONE NO.	E-MAIL ADDRESS	

PROJECT NO./NAME <u>30112891.00005 / Rauer PNC</u>	SAMPLER(S) - PLEASE PRINT/SIGN NAME <u>Sommer Guy / Sommer Guy</u>
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	5.12 Me m		92600																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

RELINQUISHED BY:	<u>Sommer Guy / Arcadis</u>	Sampler	DATE	TIME
SIGNATURE/ORGANIZATION			9/21/22	10:30
RECEIVED BY:	<u>Sommer</u>		DATE	TIME
SIGNATURE/ORGANIZATION			9/22/22	10:30
RELINQUISHED BY:	<u>M. Calcote</u>		DATE	TIME
SIGNATURE/ORGANIZATION			9/22/22	1600

RELINQUISHED BY:	DATE	TIME
SIGNATURE/ORGANIZATION		
RECEIVED BY:	DATE	TIME
SIGNATURE/ORGANIZATION		
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
NOTES:		TEMP. ON ARRIVAL 3.5

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



Analytical Laboratory Report

Report ID: S40607.01(01)
Generated on 09/29/2022

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): S40607.01-S40607.05
Project: Racer PNC / 30112891.00005
Collected Date(s): 09/21/2022
Submitted Date/Time: 09/22/2022 16:00
Sampled by: LF
P.O. #: 30112891.00005

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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
S40607.01	MWF16-12_GW-092122	Groundwater	09/21/22 10:40
S40607.02	MWF16-20_GW-092122	Groundwater	09/21/22 13:40
S40607.03	MWF16-17_GW-092122	Groundwater	09/21/22 14:58
S40607.04	MW-09-22_GW-092122	Groundwater	09/21/22 15:58
S40607.05	tripblank_01	Water	09/21/22 00:01



Analytical Laboratory Report

Lab Sample ID: S40607.01

Sample Tag: MWF16-12_GW-092122

Collected Date/Time: 09/21/2022 10:40

Matrix: Groundwater

COC Reference: 157353

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 03:19, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	50	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40607.01 (continued)

Sample Tag: MWF16-12_GW-092122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 03:19, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40607.02

Sample Tag: MWF16-20_GW-092122

Collected Date/Time: 09/21/2022 13:40

Matrix: Groundwater

COC Reference: 157353

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 03:43, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	57	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	180	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	2	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	120	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	11	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	6	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40607.02 (continued)
Sample Tag: MWF16-20_GW-092122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 03:43, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	45	1		ug/L	1	75-34-3	
1,1-Dichloroethene	9	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40607.03

Sample Tag: MWF16-17_GW-092122

Collected Date/Time: 09/21/2022 14:58

Matrix: Groundwater

COC Reference: 157353

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 04:07, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	4	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40607.03 (continued)

Sample Tag: MWF16-17_GW-092122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 04:07, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40607.04

Sample Tag: MW-09-22_GW-092122

Collected Date/Time: 09/21/2022 15:58

Matrix: Groundwater

COC Reference: 157353

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 04:30, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	2	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	2	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	1	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	195	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	4	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40607.04 (continued)

Sample Tag: MW-09-22_GW-092122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 04:30, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40607.05

Sample Tag: tripblank_01

Collected Date/Time: 09/21/2022 00:01

Matrix: Water

COC Reference: 157353

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 00:11, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40607.05 (continued)

Sample Tag: tripblank_01

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 00:11, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S40607

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

Project: Racer PNC / 30112891.00005

Submitted:09/22/2022 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 3.5
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? Subcontracted 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 Fifary Linder			
COMPANY Arcadis			
ADDRESS 28550 Cabot Dr #500			
CITY Novi		STATE M	ZIP CODE 48377
PHONE NO. 248 994 2240		CELL NO.	P.O. NO.
E-MAIL ADDRESS		QUOTE NO.	

CONTACT NAME		☐ SAME	
COMPANY			
ADDRESS			
CITY		STATE	ZIP CODE
PHONE NO.	E-MAIL ADDRESS		

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME Kaver PNC / 30112891.00005	SAMPLER(S) - PLEASE PRINT/SIGN NAME L. Patricia Ferreira / [Signature]
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER	
DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER	

Certifications

☐ OHIO VAP ☐ Drinking Water

☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York

☐ Other _____

Special Instructions

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	Leticia Fueni	☒ Sampler	DATE 09/21/22	TIME 07:50
RECEIVED BY: SIGNATURE/ORGANIZATION	Tommy Guy		DATE 9/22/22	TIME 07:50
RELINQUISHED BY: SIGNATURE/ORGANIZATION	Tommy Guy / Arcadis		DATE 9/22/22	TIME 10:27
RECEIVED BY: SIGNATURE/ORGANIZATION	Tommy Guy		DATE 9/22/22	TIME 10:27

RELINQUISHED BY:		DATE		TIME	
SIGNATURE/ORGANIZATION		9/22/22		16:45	
RECEIVED BY:		DATE		TIME	
SIGNATURE/ORGANIZATION		9/22/22		1600	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL	3.5
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: S40667.01(01)
Generated on 09/29/2022

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): S40667.01-S40667.08
Project: 30112891.00005 / Racer PNC
Collected Date(s): 09/20/2022 - 09/23/2022
Submitted Date/Time: 09/23/2022 16:00
Sampled by: Christina Weaver
P.O. #: 30112891.00005

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
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs



Analytical Laboratory Report

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40667.01	Trip Blank	Water	09/20/22 00:01
S40667.02	MW-08-21_GW-092022	Groundwater	09/20/22 12:55
S40667.03	MW-06-20_GW-092022	Groundwater	09/20/22 13:45
S40667.04	MWF16-23_GW-092022	Groundwater	09/20/22 14:55
S40667.05	DUP-05_GW-092022	Groundwater	09/20/22 00:01
S40667.06	DUP-06_GW-092022	Groundwater	09/20/22 00:01
S40667.07	MWF16-25_GW092322	Groundwater	09/23/22 10:38
S40667.08	MW-11-22_GW092322	Groundwater	09/23/22 12:03



Analytical Laboratory Report

Lab Sample ID: S40667.01

Sample Tag: Trip Blank

Collected Date/Time: 09/20/2022 00:01

Matrix: Water

COC Reference: 154494

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 15:09, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40667.01 (continued)
Sample Tag: Trip Blank

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 15:09, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40667.02

Sample Tag: MW-08-21_GW-092022

Collected Date/Time: 09/20/2022 12:55

Matrix: Groundwater

COC Reference: 154494

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 16:06, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	5	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	10	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40667.02 (continued)

Sample Tag: MW-08-21_GW-092022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 16:06, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40667.03

Sample Tag: MW-06-20_GW-092022

Collected Date/Time: 09/20/2022 13:45

Matrix: Groundwater

COC Reference: 154494

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 16:25, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	6	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	9	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40667.03 (continued)
Sample Tag: MW-06-20_GW-092022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 16:25, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40667.04

Sample Tag: MWF16-23_GW-092022

Collected Date/Time: 09/20/2022 14:55

Matrix: Groundwater

COC Reference: 154494

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/27/22 10:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/26/22 21:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 16:45, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	12	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	13	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	



Analytical Laboratory Report

Lab Sample ID: S40667.04 (continued)

Sample Tag: MWF16-23_GW-092022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 16:45, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	17	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40667.05

Sample Tag: DUP-05_GW-092022

Collected Date/Time: 09/20/2022 00:01

Matrix: Groundwater

COC Reference: 154494

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 17:04, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	6	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	9	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40667.05 (continued)

Sample Tag: DUP-05_GW-092022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 17:04, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40667.06

Sample Tag: DUP-06_GW-092022

Collected Date/Time: 09/20/2022 00:01

Matrix: Groundwater

COC Reference: 154494

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/27/22 10:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/26/22 21:46, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 17:23, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	12	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	13	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	



Analytical Laboratory Report

Lab Sample ID: S40667.06 (continued)

Sample Tag: DUP-06_GW-092022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 17:23, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	18	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40667.07

Sample Tag: MWF16-25_GW092322

Collected Date/Time: 09/23/2022 10:38

Matrix: Groundwater

COC Reference: 154494

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/27/22 10:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/26/22 22:07, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 17:42, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	3	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	38	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	3	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	



Analytical Laboratory Report

Lab Sample ID: S40667.07 (continued)

Sample Tag: MWF16-25_GW092322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 17:42, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40667.08

Sample Tag: MW-11-22_GW092322

Collected Date/Time: 09/23/2022 12:03

Matrix: Groundwater

COC Reference: 154494

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 18:01, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	1	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40667.08 (continued)
Sample Tag: MW-11-22_GW092322

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 18:01, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S40667

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

Project: 30112891.00005 / Racer PNC

Submitted:09/23/2022 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 3.2
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: _____



Analytical Laboratory Report

Report ID: S40669.01(01)
Generated on 09/29/2022

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): S40669.01-S40669.05
Project: Racer PNC / 30112891.00005
Collected Date(s): 09/22/2022
Submitted Date/Time: 09/23/2022 16:00
Sampled by: LF
P.O. #: 30112891.00005

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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
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs



Analytical Laboratory Report

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40669.01	MWF16-05_GW-092222	Groundwater	09/22/22 09:10
S40669.02	MWF16-18_GW-092222	Groundwater	09/22/22 10:17
S40669.03	MWF16-06_GW-092222	Groundwater	09/22/22 12:07
S40669.04	TW-12-22_GW-092222	Groundwater	09/22/22 13:39
S40669.05	Trip Blank	Water	09/22/22 00:01



Analytical Laboratory Report

Lab Sample ID: S40669.01

Sample Tag: MWF16-05_GW-092222

Collected Date/Time: 09/22/2022 09:10

Matrix: Groundwater

COC Reference: 157357

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 18:20, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	1,000		ug/L	20	67-64-1	Y
2-Butanone (MEK)	Not detected	500		ug/L	20	78-93-3	Y
Benzene	Not detected	20		ug/L	20	71-43-2	Y
Bromodichloromethane	Not detected	20		ug/L	20	75-27-4	Y
Bromoform	Not detected	20		ug/L	20	75-25-2	Y
Bromomethane	Not detected	100		ug/L	20	74-83-9	Y
Carbon disulfide	Not detected	100		ug/L	20	75-15-0	Y
Carbon tetrachloride	Not detected	20		ug/L	20	56-23-5	Y
Chlorobenzene	Not detected	20		ug/L	20	108-90-7	Y
Chloroethane	Not detected	100		ug/L	20	75-00-3	Y
Chloroform	Not detected	20		ug/L	20	67-66-3	Y
Chloromethane	Not detected	100		ug/L	20	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	100		ug/L	20	96-12-8	Y
1,2-Dichlorobenzene	Not detected	20		ug/L	20	95-50-1	Y
1,2-Dichloroethane	Not detected	20		ug/L	20	107-06-2	Y
1,2-Dichloropropane	Not detected	20		ug/L	20	78-87-5	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
cis-1,2-Dichloroethene	Not detected	20		ug/L	20	156-59-2	Y
Dibromochloromethane	Not detected	100		ug/L	20	124-48-1	Y
Dichlorodifluoromethane	Not detected	100		ug/L	20	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	20		ug/L	20	156-60-5	Y
Ethylbenzene	Not detected	20		ug/L	20	100-41-4	Y
2-Hexanone	Not detected	1,000		ug/L	20	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	1,000		ug/L	20	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	100		ug/L	20	1634-04-4	Y
Methylene chloride	Not detected	100		ug/L	20	75-09-2	Y
Styrene	Not detected	20		ug/L	20	100-42-5	Y
1,1,1-Trichloroethane	Not detected	20		ug/L	20	71-55-6	Y
1,1,2-Trichloroethane	Not detected	20		ug/L	20	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	100		ug/L	20	120-82-1	Y
Tetrachloroethene	680	20		ug/L	20	127-18-4	Y
Toluene	Not detected	20		ug/L	20	108-88-3	Y
Trichloroethene	30	20		ug/L	20	79-01-6	Y
Trichlorofluoromethane	Not detected	20		ug/L	20	75-69-4	Y
Vinyl chloride	Not detected	20		ug/L	20	75-01-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S40669.01 (continued)

Sample Tag: MWF16-05_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 18:20, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	20		ug/L	20	95-47-6	Y
p,m-Xylene*	Not detected	40		ug/L	20		Y
Isopropylbenzene	Not detected	20		ug/L	20	98-82-8	Y
Cyclohexane	Not detected	20		ug/L	20	110-82-7	Y
1,1-Dichloroethane	Not detected	20		ug/L	20	75-34-3	Y
1,1-Dichloroethene	Not detected	20		ug/L	20	75-35-4	Y
Methyl Acetate	Not detected	200		ug/L	20	79-20-9	Y
Methyl cyclohexane	Not detected	20		ug/L	20	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	20		ug/L	20	76-13-1	Y
1,2-Dibromoethane	Not detected	20		ug/L	20	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	20		ug/L	20	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-02-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S40669.02

Sample Tag: MWF16-18_GW-092222

Collected Date/Time: 09/22/2022 10:17

Matrix: Groundwater

COC Reference: 157357

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 18:39, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	500		ug/L	10	67-64-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	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
cis-1,2-Dichloroethene	100	10		ug/L	10	156-59-2	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
Tetrachloroethene	1,350	10		ug/L	10	127-18-4	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S40669.02 (continued)

Sample Tag: MWF16-18_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 18:39, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
Isopropylbenzene	Not detected	10		ug/L	10	98-82-8	Y
Cyclohexane	Not detected	10		ug/L	10	110-82-7	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S40669.03

Sample Tag: MWV16-06_GW-092222

Collected Date/Time: 09/22/2022 12:07

Matrix: Groundwater

COC Reference: 157357

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/27/22 10:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/26/22 22:29, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	8	1		ug/L	1	123-91-1	

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 18:58, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	9	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	15	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	2	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	29	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	135	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	63	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	



Analytical Laboratory Report

Lab Sample ID: S40669.03 (continued)

Sample Tag: MWF16-06_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 18:58, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	9	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	1	1		ug/L	1	110-82-7	
1,1-Dichloroethane	95	1		ug/L	1	75-34-3	
1,1-Dichloroethene	10	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40669.04

Sample Tag: TW-12-22_GW-092222

Collected Date/Time: 09/22/2022 13:39

Matrix: Groundwater

COC Reference: 157357

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 19:17, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	7	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	57	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	3	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	6	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	6	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40669.04 (continued)
Sample Tag: TW-12-22_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 19:17, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	10	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40669.05

Sample Tag: Trip Blank

Collected Date/Time: 09/22/2022 00:01

Matrix: Water

COC Reference: 157357

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 15:28, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40669.05 (continued)

Sample Tag: Trip Blank

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 15:28, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S40669

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

Project: Racer PNC / 30112891.00005

Submitted:09/23/2022 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 3.2
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 Tiffany Linder			
COMPANY Arcadis			
ADDRESS 28550 Cabot Dr # 500			
CITY Novi		STATE MI	ZIP CODE 48377
PHONE NO —		CELL NO —	P.O. NO 30112891, 00005
E-MAIL ADDRESS TIFFANY.LINDER@ARCADIS.COM ALEXIS.CRISTO@ARCADIS.COM		QUOTE NO. —	

CHAIN OF CUSTODY RECORD

CONTACT NAME		☐ SAME	
COMPANY			
ADDRESS			
CITY		STATE	ZIP CODE
PHONE NO.	E-MAIL ADDRESS		

INVOICE TO

PROJECT NO./NAME Lower INC 80112341.00005	SAMPLER(S) - PLEASE PRINT/SIGN NAME Lekha Ramia /
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)

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

Certifications

☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York☐ Other _____

Special Instructions

[illegible]

RELINQUISHED BY:	<i>Lehcia Feneira</i>	☒ Sampler	DATE	TIME
SIGNATURE/ORGANIZATION			09/22/22	15:20
RECEIVED BY:	<i>Mori Cold storage</i>		DATE	TIME
SIGNATURE/ORGANIZATION			09/22/22	15:22
RELINQUISHED BY:	<i>Sommer Luy</i>		DATE	TIME
SIGNATURE/ORGANIZATION			9/23/22	
RECEIVED BY:	<i>Hanna Muli</i>		DATE	TIME
SIGNATURE/ORGANIZATION			9/27/22	12:00

RELINQUISHED BY: SIGNATURE/ORGANIZATION <i>J. Smith</i>			DATE 9/23/22	TIME 16:00
RECEIVED BY: SIGNATURE/ORGANIZATION <i>Patrol</i>			DATE 9/23/22	TIME 16:00
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES	TEMP. ON ARRIVAL
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		3.2

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



Analytical Laboratory Report

Report ID: S40670.01(01)
Generated on 10/03/2022

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): S40670.01-S40670.12
Project: 30112891.00005 / Racer PNC
Collected Date(s): 09/22/2022
Submitted Date/Time: 09/23/2022 16:00
Sampled by: Christina Weaver
P.O. #: 30112891.00005

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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
E200.8	EPA Method 200.8 Revision 5.4
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs



Analytical Laboratory Report

Sample Summary (12 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40670.01	MWF16-22_GW-092222	Groundwater	09/22/22 11:05
S40670.02	MWF16-24_GW-092222	Groundwater	09/22/22 11:55
S40670.03	MWF12-01R_GW-092222	Groundwater	09/22/22 13:30
S40670.04	MWF12-01R_GW-092222	Groundwater	09/22/22 13:30
S40670.05	MWF12-01R_GW-092222	Groundwater	09/22/22 13:35
S40670.06	MW-02-17_GW-092222	Groundwater	09/22/22 14:45
S40670.07	Tripblank_54	Water	09/22/22 00:01
S40670.08	MW05-08_GW-092222	Groundwater	09/22/22 10:35
S40670.09	MW05-09R_GW-092222	Groundwater	09/22/22 11:30
S40670.10	MW05-10_GW-092222	Groundwater	09/22/22 12:35
S40670.11	MW05-10_GW-092222 MS	Groundwater	09/22/22 12:35
S40670.12	MW05-10_GW-092222 MSD	Groundwater	09/22/22 12:35



Analytical Laboratory Report

Lab Sample ID: S40670.01

Sample Tag: MWF16-22_GW-092222

Collected Date/Time: 09/22/2022 11:05

Matrix: Groundwater

COC Reference: 157356

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 19:36, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	7	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	76	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	2	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40670.01 (continued)

Sample Tag: MWF16-22_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 19:36, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40670.02

Sample Tag: MWF16-24_GW-092222

Collected Date/Time: 09/22/2022 11:55

Matrix: Groundwater

COC Reference: 157356

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 19:56, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40670.02 (continued)
Sample Tag: MWF16-24_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 19:56, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40670.03

Sample Tag: MWF12-01R_GW-092222

Collected Date/Time: 09/22/2022 13:30

Matrix: Groundwater

COC Reference: 157356

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/27/22 10:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/26/22 22:51, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	40	1		ug/L	1	123-91-1	

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 20:15, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	47	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	



Analytical Laboratory Report

Lab Sample ID: S40670.03 (continued)
Sample Tag: MWF12-01R_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 20:15, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	1	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40670.04
Sample Tag: MWF12-01R_GW-092222
Collected Date/Time: 09/22/2022 13:30
Matrix: Groundwater
COC Reference: 157356

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	10/03/22 10:00	CCM	

Metals

Method: E200.8, Run Date: 10/03/22 11:38, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Manganese	0.801	0.005		mg/L	5	7439-96-5	



Analytical Laboratory Report

Lab Sample ID: S40670.05
Sample Tag: MWF12-01R_GW-092222
Collected Date/Time: 09/22/2022 13:35
Matrix: Groundwater
COC Reference: 157356

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	10/03/22 10:00	CCM	

Metals

Method: E200.8, Run Date: 10/03/22 11:41, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Manganese, Dissolved	0.698	0.005		mg/L	5	7439-96-5	



Analytical Laboratory Report

Lab Sample ID: S40670.06

Sample Tag: MW-02-17_GW-092222

Collected Date/Time: 09/22/2022 14:45

Matrix: Groundwater

COC Reference: 157356

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/27/22 10:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/26/22 23:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	5	1		ug/L	1	123-91-1	

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 20:34, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	6	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	8	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	



Analytical Laboratory Report

Lab Sample ID: S40670.06 (continued)

Sample Tag: MW-02-17_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 20:34, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	2	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40670.07

Sample Tag: Tripblank_54

Collected Date/Time: 09/22/2022 00:01

Matrix: Water

COC Reference: 157356

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 15:47, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40670.07 (continued)

Sample Tag: Tripblank_54

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 15:47, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40670.08

Sample Tag: MW05-08_GW-092222

Collected Date/Time: 09/22/2022 10:35

Matrix: Groundwater

COC Reference: 157356

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 20:53, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	3	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40670.08 (continued)

Sample Tag: MW05-08_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 20:53, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40670.09

Sample Tag: MW05-09R_GW-092222

Collected Date/Time: 09/22/2022 11:30

Matrix: Groundwater

COC Reference: 157356

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 21:13, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	22	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	15	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	3	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40670.09 (continued)

Sample Tag: MW05-09R_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/27/22 21:13, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40670.10

Sample Tag: MW05-10_GW-092222

Collected Date/Time: 09/22/2022 12:35

Matrix: Groundwater

COC Reference: 157356

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 15:05, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	4	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	8	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40670.10 (continued)
Sample Tag: MW05-10_GW-092222

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 15:05, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S40670.11

Sample Tag: MW05-10_GW-092222 MS

Collected Date/Time: 09/22/2022 12:35

Matrix: Groundwater

COC Reference: 157356

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 12:04, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	48	25		ug/L	1	78-93-3	1
Benzene	46	1		ug/L	1	71-43-2	1
Bromodichloromethane	48	1		ug/L	1	75-27-4	1
Bromoform	51	1		ug/L	1	75-25-2	1
Bromomethane	45	5		ug/L	1	74-83-9	1
Carbon disulfide	42	5		ug/L	1	75-15-0	1
Carbon tetrachloride	44	1		ug/L	1	56-23-5	1
Chlorobenzene	48	1		ug/L	1	108-90-7	1
Chloroethane	42	5		ug/L	1	75-00-3	1
Chloroform	46	1		ug/L	1	67-66-3	1
Chloromethane	45	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	54	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	48	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	46	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	46	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	47	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	47	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	50	1		ug/L	1	156-59-2	1
Dibromochloromethane	51	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	41	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	44	1		ug/L	1	156-60-5	1
Ethylbenzene	47	1		ug/L	1	100-41-4	1
2-Hexanone	51	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	50	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	48	5		ug/L	1	1634-04-4	1
Methylene chloride	47	5		ug/L	1	75-09-2	1
Styrene	49	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	47	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	48	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	51	5		ug/L	1	120-82-1	1
Tetrachloroethene	45	1		ug/L	1	127-18-4	1
Toluene	45	1		ug/L	1	108-88-3	1
Trichloroethene	52	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	45	1		ug/L	1	75-69-4	1
Vinyl chloride	45	1		ug/L	1	75-01-4	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S40670.11 (continued)
Sample Tag: MW05-10_GW-092222 MS

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 12:04, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	48	1		ug/L	1	95-47-6	1
p,m-Xylene*	94	2		ug/L	1		1
Isopropylbenzene	47	1		ug/L	1	98-82-8	1
Cyclohexane	41	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	49	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	42	1		ug/L	1	75-35-4	1
Methyl Acetate	48	10		ug/L	1	79-20-9	1
Methyl cyclohexane	42	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	42	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	50	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	51	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	49	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	49	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S40670.12

Sample Tag: MW05-10_GW-092222 MSD

Collected Date/Time: 09/22/2022 12:35

Matrix: Groundwater

COC Reference: 157356

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/28/22 12:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 12:23, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	51	25		ug/L	1	78-93-3	1
Benzene	52	1		ug/L	1	71-43-2	1
Bromodichloromethane	54	1		ug/L	1	75-27-4	1
Bromoform	58	1		ug/L	1	75-25-2	1
Bromomethane	52	5		ug/L	1	74-83-9	1
Carbon disulfide	48	5		ug/L	1	75-15-0	1
Carbon tetrachloride	50	1		ug/L	1	56-23-5	1
Chlorobenzene	55	1		ug/L	1	108-90-7	1
Chloroethane	48	5		ug/L	1	75-00-3	1
Chloroform	53	1		ug/L	1	67-66-3	1
Chloromethane	51	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	58	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	56	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	51	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	52	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	54	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	54	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	56	1		ug/L	1	156-59-2	1
Dibromochloromethane	58	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	48	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	50	1		ug/L	1	156-60-5	1
Ethylbenzene	54	1		ug/L	1	100-41-4	1
2-Hexanone	53	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	53	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	54	5		ug/L	1	1634-04-4	1
Methylene chloride	53	5		ug/L	1	75-09-2	1
Styrene	56	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	54	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	54	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	59	5		ug/L	1	120-82-1	1
Tetrachloroethene	51	1		ug/L	1	127-18-4	1
Toluene	51	1		ug/L	1	108-88-3	1
Trichloroethene	59	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	52	1		ug/L	1	75-69-4	1
Vinyl chloride	52	1		ug/L	1	75-01-4	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S40670.12 (continued)
Sample Tag: MW05-10_GW-092222 MSD

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 09/28/22 12:23, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	55	1		ug/L	1	95-47-6	1
p,m-Xylene*	107	2		ug/L	1		1
Isopropylbenzene	54	1		ug/L	1	98-82-8	1
Cyclohexane	46	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	55	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	48	1		ug/L	1	75-35-4	1
Methyl Acetate	52	10		ug/L	1	79-20-9	1
Methyl cyclohexane	48	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	49	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	58	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	56	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	54	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	55	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L

Merit Laboratories Login Checklist

Lab Set ID:S40670

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

Project: 30112891.00005 / Racer PNC

Submitted:09/23/2022 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 3.2
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: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S40670 Submitted: 09/23/2022 16:00

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

Project: 30112891.00005 / Racer PNC

Initial Preservation Check: 09/23/2022 16:36 PFD

Preservation Recheck (E200.8): N/A

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

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S40670.04	125ml Plastic HNO3	<2			
S40670.05	125ml Plastic HNO3	<2			

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME tiffany Linder			CONTACT NAME			☐ SAME			
COMPANY Arcadis			COMPANY						
ADDRESS 28550 Cabot Dr #500			ADDRESS						
CITY Novi		STATE MI	ZIP CODE 48377		CITY			STATE	ZIP CODE
PHONE NO. 2489942240	CELL NO.		P.O. NO. 30112891.00005		PHONE NO.		E-MAIL ADDRESS		
E-MAIL ADDRESS t.linder@arcadis.com		QUOTE NO.		ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)					

PROJECT NO./NAME 30112891, 00005 / Racer PNC		SAMPLER(S) - PLEASE PRINT/SIGN NAME Sommer Guy / Sommer Guy		effluents VOC's d 4260 SMS (1,4 Dioxane) b2A (total metals) b2A (dissolved metals)	Certifications	
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER					☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ ADD ☐ OTHER					Project Locations	
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		☐ Detroit ☐ New York		

[illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Sommer Day / Arcadia</i>	DATE	TIME	RELINQUISHED BY:		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>	DATE	TIME	RECEIVED BY:		DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>	DATE	TIME	SEAL NO	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES. TEMP. ON ARRIVAL <u>3.7</u>
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>	DATE	TIME	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: S40973.01(01)
Generated on 10/06/2022

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): S40973.01
Project: 30112891.00005
Collected Date(s): 09/30/2022
Submitted Date/Time: 09/30/2022 16:00
Sampled by: Sommer Guy
P.O. #: 30112891.00005

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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
S40973.01	MWF16-07_GW-093022	Groundwater	09/30/22 12:00



Analytical Laboratory Report

Lab Sample ID: S40973.01

Sample Tag: MWF16-07_GW-093022

Collected Date/Time: 09/30/2022 12:00

Matrix: Groundwater

COC Reference: 154483

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	10/05/22 15:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 10/04/22 17:43, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S40973.01 (continued)
Sample Tag: MWF16-07_GW-093022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 10/04/22 17:43, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S40973

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

Project: 30112891.00005

Submitted:09/30/2022 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 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: _____

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



Analytical Laboratory Report

Report ID: S42910.01(01)
Generated on 12/02/2022

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): S42910.01-S42910.06
Project: 30112891.00005 RACER PNC
Collected Date(s): 11/28/2022 - 11/29/2022
Submitted Date/Time: 11/29/2022 16:15
Sampled by: Gary Schafer
P.O. #: 30112891.00005

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.

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Report Narrative

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WBENC	#2005110032
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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
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M	Result reported to MDL not RDL
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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
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p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
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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
S42910.01	Trip Blank	Water	11/29/22 00:01
S42910.02	MW-13-22_GW-112822	Groundwater	11/28/22 14:21
S42910.03	MW-14-22_GW-112822	Groundwater	11/28/22 15:46
S42910.04	MW-15-22_GW-112922	Groundwater	11/29/22 09:31
S42910.05	MW-16-22_GW-112922	Groundwater	11/29/22 11:36
S42910.06	DUP-03_GW-112922	Groundwater	11/29/22 00:01



Analytical Laboratory Report

Lab Sample ID: S42910.01

Sample Tag: Trip Blank

Collected Date/Time: 11/29/2022 00:01

Matrix: Water

COC Reference: 158112

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/01/22 11:20	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 11/30/22 15:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42910.01 (continued)

Sample Tag: Trip Blank

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 11/30/22 15:09, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42910.02

Sample Tag: MW-13-22_GW-112822

Collected Date/Time: 11/28/2022 14:21

Matrix: Groundwater

COC Reference: 158112

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/01/22 11:20	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 11/30/22 17:05, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42910.02 (continued)
Sample Tag: MW-13-22_GW-112822

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 11/30/22 17:05, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42910.03

Sample Tag: MW-14-22_GW-112822

Collected Date/Time: 11/28/2022 15:46

Matrix: Groundwater

COC Reference: 158112

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/01/22 11:20	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 11/30/22 17:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	2	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	1	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	14	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	9	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	98	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	18	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42910.03 (continued)
Sample Tag: MW-14-22_GW-112822

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 11/30/22 17:25, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42910.04

Sample Tag: MW-15-22_GW-112922

Collected Date/Time: 11/29/2022 09:31

Matrix: Groundwater

COC Reference: 158112

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/01/22 11:20	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 11/30/22 17:44, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42910.04 (continued)

Sample Tag: MW-15-22_GW-112922

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 11/30/22 17:44, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42910.05

Sample Tag: MW-16-22_GW-112922

Collected Date/Time: 11/29/2022 11:36

Matrix: Groundwater

COC Reference: 158112

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/01/22 11:20	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 11/30/22 18:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	4	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	4	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	55	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	4	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	10	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	306	1		ug/L	1	127-18-4	E
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	27	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	

E-Concentration exceeds calibration range



Analytical Laboratory Report

Lab Sample ID: S42910.05 (continued)

Sample Tag: MW-16-22_GW-112922

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 11/30/22 18:04, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	1		ug/L	1	95-47-6	
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	12	1		ug/L	1	75-34-3	
1,1-Dichloroethene	1	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Volatile Organics - Arcadis (Replicate 01), Method: SW5030C/8260C, Run Date: 12/01/22 22:01, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	500		ug/L	10	67-64-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	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
cis-1,2-Dichloroethene	50	10		ug/L	10	156-59-2	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
Tetrachloroethene	310	10		ug/L	10	127-18-4	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S42910.05 (continued)

Sample Tag: MW-16-22_GW-112922

Volatile Organics - Arcadis (Replicate 01), Method: SW5030C/8260C, Run Date: 12/01/22 22:01, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	30	10		ug/L	10	79-01-6	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
Isopropylbenzene	Not detected	10		ug/L	10	98-82-8	Y
Cyclohexane	Not detected	10		ug/L	10	110-82-7	Y
1,1-Dichloroethane	10	10		ug/L	10	75-34-3	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S42910.06

Sample Tag: DUP-03_GW-112922

Collected Date/Time: 11/29/2022 00:01

Matrix: Groundwater

COC Reference: 158112

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/01/22 11:20	KAG	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 11/30/22 18:24, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42910.06 (continued)

Sample Tag: DUP-03_GW-112922

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 11/30/22 18:24, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S42910

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

Project: 30112891.00005 RACER PNC

Submitted: 11/29/2022 16:15 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 3.7
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 Dup sample not listed on 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 28550 Cabot DR. Suite 500	
CITY Novi	STATE MI
ZIP CODE 48317	
PHONE NO. 937-206-4005	CELL NO.
E-MAIL ADDRESS Lexi.Crisp@arcadis.com	QUOTE NO.

CHAIN OF CUSTODY RECORD

CONTACT NAME		☐ SAME	
COMPANY			
ADDRESS			
CITY		STATE	ZIP CODE
PHONE NO	E-MAIL ADDRESS		

INVOICE TO

PROJECT NO./NAME 30112891.0005 Racer PNC	SAMPLER(S) - PLEASE PRINT/SIGN NAME Garry Schaefer
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

Certifications

☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York☐ Other

Special Instructions

[illegible]

RELINQUISHED BY:	<i>Gary Schaefer</i>	Arcticis	☒ Sampler	DATE	TIME
SIGNATURE/ORGANIZATION	<i>Gary Schaefer</i>	Arcticis		11/29/22	10:00
RECEIVED BY:	<i>J. Miller</i>			DATE	TIME
SIGNATURE/ORGANIZATION	<i>J. Miller</i>			11/29/22	12:00
RELINQUISHED BY:	<i>J. Miller</i>			DATE	TIME
SIGNATURE/ORGANIZATION	<i>J. Miller</i>			11/29/22	10:15
RECEIVED BY:	<i>M. Brooks</i>			DATE	TIME
SIGNATURE/ORGANIZATION	<i>M. Brooks</i>			11/29/22	16:15

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP ON ARRIVAL <u>37</u>
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

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

Rev. 126.22



Analytical Laboratory Report

Report ID: S42963.01(01)
Generated on 12/12/2022

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): S42963.01-S42963.14
Project: RACER PNC 30112891.00005
Collected Date(s): 11/29/2022 - 11/30/2022
Submitted Date/Time: 11/30/2022 15:35
Sampled by: Christina Weaver
P.O. #: 30112891.00005

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 (14 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S42963.01	MW-07-20_GW-112922	Groundwater	11/29/22 11:45
S42963.02	MW-05-18_GW-112922	Groundwater	11/29/22 12:58
S42963.03	MW-02-17_GW-112922	Groundwater	11/29/22 14:02
S42963.04	MWF7-02_GW-112922	Groundwater	11/29/22 15:00
S42963.05	MWF7-02-MS_GW-112922	Groundwater	11/29/22 15:00
S42963.06	MWF7-02-MSD_GW-112922	Groundwater	11/29/22 15:00
S42963.07	Trip Blank_02	Water	11/29/22 00:01
S42963.08	MW-08-21_GW-113022	Groundwater	11/30/22 09:25
S42963.09	MWF16-23_GW-113022	Groundwater	11/30/22 10:18
S42963.10	MW-06-20_GW-113022	Groundwater	11/30/22 11:10
S42963.11	DUP-01_GW-113022	Groundwater	11/30/22 00:01
S42963.12	DUP-02_GW-113022	Groundwater	11/30/22 00:01
S42963.13	MWOS-09R_GW-113022	Groundwater	11/30/22 12:13
S42963.14	MWF16-25_GW-113022	Groundwater	11/30/22 13:05



Analytical Laboratory Report

Lab Sample ID: S42963.01

Sample Tag: MW-07-20_GW-112922

Collected Date/Time: 11/29/2022 11:45

Matrix: Groundwater

COC Reference: 158111

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	12/02/22 10:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 01:49, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	13	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	5	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	2	1		ug/L	1	79-01-6	
Trichlorofluoromethane	1	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42963.01 (continued)
Sample Tag: MW-07-20_GW-112922

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 01:49, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42963.02

Sample Tag: MW-05-18_GW-112922

Collected Date/Time: 11/29/2022 12:58

Matrix: Groundwater

COC Reference: 158111

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	12/02/22 10:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 02:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	8	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	7	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	1	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42963.02 (continued)
Sample Tag: MW-05-18_GW-112922

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 02:09, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	3	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42963.03

Sample Tag: MW-02-17_GW-112922

Collected Date/Time: 11/29/2022 14:02

Matrix: Groundwater

COC Reference: 158111

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	12/02/22 10:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 02:28, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	8	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	7	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42963.03 (continued)

Sample Tag: MW-02-17_GW-112922

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 02:28, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	3	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42963.04

Sample Tag: MWF7-02_GW-112922

Collected Date/Time: 11/29/2022 15:00

Matrix: Groundwater

COC Reference: 158111

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	12/12/22 10:30	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 06:03, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	1	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	1	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	100	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	1	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	95	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	4	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42963.04 (continued)
Sample Tag: MWF7-02_GW-112922

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 06:03, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	8	1		ug/L	1	75-34-3	
1,1-Dichloroethene	13	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42963.05

Sample Tag: MWF7-02-MS_GW-112922

Collected Date/Time: 11/29/2022 15:00

Matrix: Groundwater

COC Reference: 158111

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	12/12/22 10:30	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 01:46, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	43	25		ug/L	1	78-93-3	1
Benzene	45	1		ug/L	1	71-43-2	1
Bromodichloromethane	45	1		ug/L	1	75-27-4	1
Bromoform	43	1		ug/L	1	75-25-2	1
Bromomethane	42	5		ug/L	1	74-83-9	1
Carbon disulfide	43	5		ug/L	1	75-15-0	1
Carbon tetrachloride	42	1		ug/L	1	56-23-5	1
Chlorobenzene	44	1		ug/L	1	108-90-7	1
Chloroethane	44	5		ug/L	1	75-00-3	1
Chloroform	45	1		ug/L	1	67-66-3	1
Chloromethane	43	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	42	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	43	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	44	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	45	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	43	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	43	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	46	1		ug/L	1	156-59-2	1
Dibromochloromethane	44	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	41	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	44	1		ug/L	1	156-60-5	1
Ethylbenzene	44	1		ug/L	1	100-41-4	1
2-Hexanone	Not detected	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	44	5		ug/L	1	1634-04-4	1
Methylene chloride	44	5		ug/L	1	75-09-2	1
Styrene	43	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	130	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	46	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	42	5		ug/L	1	120-82-1	1
Tetrachloroethene	132	1		ug/L	1	127-18-4	1
Toluene	45	1		ug/L	1	108-88-3	1
Trichloroethene	48	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	41	1		ug/L	1	75-69-4	1
Vinyl chloride	42	1		ug/L	1	75-01-4	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S42963.05 (continued)
Sample Tag: MWF7-02-MS_GW-112922

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 01:46, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	44	1		ug/L	1	95-47-6	1
p,m-Xylene*	88	2		ug/L	1		1
Isopropylbenzene	44	1		ug/L	1	98-82-8	1
Cyclohexane	45	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	53	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	54	1		ug/L	1	75-35-4	1
Methyl Acetate	26	10		ug/L	1	79-20-9	1
Methyl cyclohexane	44	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	40	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	43	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	43	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	42	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	42	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S42963.06

Sample Tag: MWF7-02-MSD_GW-112922

Collected Date/Time: 11/29/2022 15:00

Matrix: Groundwater

COC Reference: 158111

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	12/12/22 10:30	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 02:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	45	25		ug/L	1	78-93-3	1
Benzene	44	1		ug/L	1	71-43-2	1
Bromodichloromethane	44	1		ug/L	1	75-27-4	1
Bromoform	44	1		ug/L	1	75-25-2	1
Bromomethane	41	5		ug/L	1	74-83-9	1
Carbon disulfide	42	5		ug/L	1	75-15-0	1
Carbon tetrachloride	42	1		ug/L	1	56-23-5	1
Chlorobenzene	43	1		ug/L	1	108-90-7	1
Chloroethane	43	5		ug/L	1	75-00-3	1
Chloroform	44	1		ug/L	1	67-66-3	1
Chloromethane	42	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	44	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	44	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	45	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	45	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	43	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	43	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	46	1		ug/L	1	156-59-2	1
Dibromochloromethane	44	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	40	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	43	1		ug/L	1	156-60-5	1
Ethylbenzene	43	1		ug/L	1	100-41-4	1
2-Hexanone	Not detected	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	46	5		ug/L	1	1634-04-4	1
Methylene chloride	45	5		ug/L	1	75-09-2	1
Styrene	43	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	130	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	46	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	42	5		ug/L	1	120-82-1	1
Tetrachloroethene	128	1		ug/L	1	127-18-4	1
Toluene	44	1		ug/L	1	108-88-3	1
Trichloroethene	46	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	40	1		ug/L	1	75-69-4	1
Vinyl chloride	40	1		ug/L	1	75-01-4	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S42963.06 (continued)
Sample Tag: MWF7-02-MSD_GW-112922

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 02:09, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	43	1		ug/L	1	95-47-6	1
p,m-Xylene*	85	2		ug/L	1		1
Isopropylbenzene	42	1		ug/L	1	98-82-8	1
Cyclohexane	45	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	52	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	53	1		ug/L	1	75-35-4	1
Methyl Acetate	27	10		ug/L	1	79-20-9	1
Methyl cyclohexane	43	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	39	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	44	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	45	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	42	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	42	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S42963.07

Sample Tag: Trip Blank_02

Collected Date/Time: 11/29/2022 00:01

Matrix: Water

COC Reference: 158111

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	12/02/22 10:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 00:52, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42963.07 (continued)

Sample Tag: Trip Blank_02

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 00:52, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42963.08

Sample Tag: MW-08-21_GW-113022

Collected Date/Time: 11/30/2022 09:25

Matrix: Groundwater

COC Reference: 158111

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	12/02/22 10:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 02:47, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	12	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	10	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42963.08 (continued)
Sample Tag: MW-08-21_GW-113022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 02:47, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	9	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42963.09

Sample Tag: MWF16-23_GW-113022

Collected Date/Time: 11/30/2022 10:18

Matrix: Groundwater

COC Reference: 158111

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	12/02/22 10:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 03:06, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	11	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	14	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	17	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42963.09 (continued)
Sample Tag: MWF16-23_GW-113022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 03:06, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42963.10

Sample Tag: MW-06-20_GW-113022

Collected Date/Time: 11/30/2022 11:10

Matrix: Groundwater

COC Reference: 158111

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	12/02/22 10:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 03:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	10	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	12	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42963.10 (continued)
Sample Tag: MW-06-20_GW-113022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 03:26, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42963.11

Sample Tag: DUP-01_GW-113022

Collected Date/Time: 11/30/2022 00:01

Matrix: Groundwater

COC Reference: 158111

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	12/02/22 10:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 03:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	10	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	12	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42963.11 (continued)
Sample Tag: DUP-01_GW-113022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 03:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42963.12

Sample Tag: DUP-02_GW-113022

Collected Date/Time: 11/30/2022 00:01

Matrix: Groundwater

COC Reference: 158111

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	12/02/22 10:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 04:05, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	11	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	1	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	13	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	17	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42963.12 (continued)
Sample Tag: DUP-02_GW-113022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 04:05, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	7	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42963.13

Sample Tag: MWOS-09R_GW-113022

Collected Date/Time: 11/30/2022 12:13

Matrix: Groundwater

COC Reference: 154546

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	12/02/22 10:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 04:24, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	25	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	2	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	13	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	3	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42963.13 (continued)
Sample Tag: MWOS-09R_GW-113022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 04:24, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S42963.14

Sample Tag: MWF16-25_GW-113022

Collected Date/Time: 11/30/2022 13:05

Matrix: Groundwater

COC Reference: 154546

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	12/02/22 10:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 04:43, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	3	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	43	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	3	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S42963.14 (continued)
Sample Tag: MWF16-25_GW-113022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/02/22 04:43, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S42963

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

Project: RACER PNC 30112891.00005

Submitted: 11/30/2022 15:35 Login User: BJB

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? Subcontracted 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 # 1 OF 2 158111

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME LEXI CRISP; TIFFANY LINDER			
COMPANY ARCADIS			
ADDRESS 28550 CABOT DRIVE #500			
CITY NOVI	STATE MI	ZIP CODE 48377	
PHONE NO. 614-985-9163	CELL NO. ---	P.O. NO. ---	
E-MAIL ADDRESS LEXI.CRISP@ARCADIS.COM; TIFFANY.LINDER@ARCADIS.COM		QUOTE NO. ---	

CONTACT NAME ACCOUNTS PAYABLE		☐ SAME	
COMPANY ARCADIS			
ADDRESS 630 PLAZA DRIVE #600			
CITY HIGHLANDS RANCH	STATE CO	ZIP CODE 80125	
PHONE NO. ---	E-MAIL ADDRESS ACCOUNTS.PAYABLE.ADM@ARCADIS.COM		

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME RACER PNC 30112891.00005	SAMPLER(S) - PLEASE PRINT/SIGN NAME CHRISTINA WEAVER
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	SITE											☐ Other _____																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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RELINQUISHED BY: SIGNATURE/ORGANIZATION Christina Weaver / ARCADIS	☒ Sampler	DATE 11/30/22	TIME 1400
RECEIVED BY: SIGNATURE/ORGANIZATION [Signature]		DATE 11/30/22	TIME 1410
RELINQUISHED BY: SIGNATURE/ORGANIZATION [Signature]		DATE 11/30/22	TIME 1535
RECEIVED BY: SIGNATURE/ORGANIZATION [Signature]		DATE 11/30/22	TIME 1535

RELINQUISHED BY: SIGNATURE/ORGANIZATION [Signature]	DATE 11/30/22	TIME 1535
RECEIVED BY: SIGNATURE/ORGANIZATION [Signature]	DATE 11/30/22	TIME 1535
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
NOTES:		TEMP. ON ARRIVAL 4.2

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

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME			
LEXI CRISP; TIFFANY LINDER			
COMPANY			
ARCADIS			
ADDRESS			
28550 CABOT DRIVE #500			
CITY			STATE
NOVI			MI
			ZIP CODE
			48377
PHONE NO.		CELL NO.	P.O. NO.
614-985-4163		—	—
E-MAIL ADDRESS		QUOTE NO.	
LEXI.CRISP@ARCADIS.COM ' TIFFANY.LINDER@ARCADIS.COM		—	

CONTACT NAME		ACCOUNTS PAYABLE		☐ SAME	
COMPANY					
ARCADIS					
ADDRESS					
630 PLAZA DRIVE #500					
CITY				STATE	
HIGHLANDS RANCH				CO	
				ZIP CODE	
				80125	
PHONE NO.		E-MAIL ADDRESS			
-		ACCOUNTSPAYABLE.ADMINISTRATION@ARCADIS.CO			
ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)					

PROJECT NO./NAME RACER PUC 30112891.00005	SAMPLER(S) - PLEASE PRINT/SIGN NAME CHRISTINA WEAVER <i>Christina</i>
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=WPIE	A=AIR	WS=WASTE

Containers & Preservatives

[illegible][illegible]

RELINQUISHED BY:	<i>Charles L. Arcadis</i>	~~Sample~~	DATE	TIME
SIGNATURE/ORGANIZATION			11/30/12	1400
RECEIVED BY:	<i>[Signature]</i>		DATE	TIME
SIGNATURE/ORGANIZATION			11/30/12	1400
RELINQUISHED BY:	<i>[Signature]</i>		DATE	TIME
SIGNATURE/ORGANIZATION			11/30/12	1535
RECEIVED BY:	<i>[Signature]</i>		DATE	TIME
SIGNATURE/ORGANIZATION				

RELINQUISHED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION			11/30/2012	1535
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL 4.2
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		



Analytical Laboratory Report

Report ID: S43005.01(01)
Generated on 12/12/2022

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): S43005.01-S43005.05
Project: RACER PNC / 30112891.00005
Collected Date(s): 11/30/2022
Submitted Date/Time: 12/01/2022 15:40
Sampled by: Christina Weaver
P.O. #: 30112891.00005

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 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
S43005.01	MWOS-08_GW-113022	Groundwater	11/30/22 14:10
S43005.02	MWOS-10_GW-113022	Groundwater	11/30/22 16:02
S43005.03	MWOS-10-MS_GW-113022	Groundwater	11/30/22 16:02
S43005.04	MWOS-10-MSD_GW-113022	Groundwater	11/30/22 16:02
S43005.05	Trip Blank_03	Water	11/30/22 00:01



Analytical Laboratory Report

Lab Sample ID: S43005.01

Sample Tag: MWOS-08_GW-113022

Collected Date/Time: 11/30/2022 14:10

Matrix: Groundwater

COC Reference: 154548

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	12/05/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 04:43, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	4	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S43005.01 (continued)
Sample Tag: MWOS-08_GW-113022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 04:43, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S43005.02

Sample Tag: MWOS-10_GW-113022

Collected Date/Time: 11/30/2022 16:02

Matrix: Groundwater

COC Reference: 154548

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	12/12/22 10:30	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 06:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	4	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	3	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	7	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S43005.02 (continued)
Sample Tag: MWOS-10_GW-113022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 06:26, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S43005.03

Sample Tag: MWOS-10-MS_GW-113022

Collected Date/Time: 11/30/2022 16:02

Matrix: Groundwater

COC Reference: 154548

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	12/12/22 10:30	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 02:32, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	50	25		ug/L	1	78-93-3	1
Benzene	46	1		ug/L	1	71-43-2	1
Bromodichloromethane	46	1		ug/L	1	75-27-4	1
Bromoform	46	1		ug/L	1	75-25-2	1
Bromomethane	43	5		ug/L	1	74-83-9	1
Carbon disulfide	43	5		ug/L	1	75-15-0	1
Carbon tetrachloride	44	1		ug/L	1	56-23-5	1
Chlorobenzene	44	1		ug/L	1	108-90-7	1
Chloroethane	44	5		ug/L	1	75-00-3	1
Chloroform	45	1		ug/L	1	67-66-3	1
Chloromethane	44	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	47	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	45	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	46	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	47	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	44	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	45	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	50	1		ug/L	1	156-59-2	1
Dibromochloromethane	46	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	42	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	45	1		ug/L	1	156-60-5	1
Ethylbenzene	44	1		ug/L	1	100-41-4	1
2-Hexanone	Not detected	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	47	5		ug/L	1	1634-04-4	1
Methylene chloride	45	5		ug/L	1	75-09-2	1
Styrene	45	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	47	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	47	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	45	5		ug/L	1	120-82-1	1
Tetrachloroethene	43	1		ug/L	1	127-18-4	1
Toluene	45	1		ug/L	1	108-88-3	1
Trichloroethene	51	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	42	1		ug/L	1	75-69-4	1
Vinyl chloride	43	1		ug/L	1	75-01-4	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S43005.03 (continued)
Sample Tag: MWOS-10-MS_GW-113022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 02:32, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	45	1		ug/L	1	95-47-6	1
p,m-Xylene*	89	2		ug/L	1		1
Isopropylbenzene	45	1		ug/L	1	98-82-8	1
Cyclohexane	47	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	50	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	44	1		ug/L	1	75-35-4	1
Methyl Acetate	38	10		ug/L	1	79-20-9	1
Methyl cyclohexane	46	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	42	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	46	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	47	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	47	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	48	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S43005.04

Sample Tag: MWOS-10-MSD_GW-113022

Collected Date/Time: 11/30/2022 16:02

Matrix: Groundwater

COC Reference: 154548

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	12/12/22 10:30	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 02:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	1
2-Butanone (MEK)	45	25		ug/L	1	78-93-3	1
Benzene	45	1		ug/L	1	71-43-2	1
Bromodichloromethane	44	1		ug/L	1	75-27-4	1
Bromoform	43	1		ug/L	1	75-25-2	1
Bromomethane	41	5		ug/L	1	74-83-9	1
Carbon disulfide	42	5		ug/L	1	75-15-0	1
Carbon tetrachloride	43	1		ug/L	1	56-23-5	1
Chlorobenzene	43	1		ug/L	1	108-90-7	1
Chloroethane	43	5		ug/L	1	75-00-3	1
Chloroform	43	1		ug/L	1	67-66-3	1
Chloromethane	42	5		ug/L	1	74-87-3	1
1,2-Dibromo-3-chloropropane	43	5		ug/L	1	96-12-8	1
1,2-Dichlorobenzene	43	1		ug/L	1	95-50-1	1
1,2-Dichloroethane	44	1		ug/L	1	107-06-2	1
1,2-Dichloropropane	45	1		ug/L	1	78-87-5	1
1,3-Dichlorobenzene	43	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	43	1		ug/L	1	106-46-7	1
cis-1,2-Dichloroethene	49	1		ug/L	1	156-59-2	1
Dibromochloromethane	44	5		ug/L	1	124-48-1	1
Dichlorodifluoromethane	40	5		ug/L	1	75-71-8	1
trans-1,2-Dichloroethene	44	1		ug/L	1	156-60-5	1
Ethylbenzene	44	1		ug/L	1	100-41-4	1
2-Hexanone	Not detected	50		ug/L	1	591-78-6	1
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	1
tert-Methyl butyl ether (MTBE)	45	5		ug/L	1	1634-04-4	1
Methylene chloride	44	5		ug/L	1	75-09-2	1
Styrene	43	1		ug/L	1	100-42-5	1
1,1,1-Trichloroethane	45	1		ug/L	1	71-55-6	1
1,1,2-Trichloroethane	46	1		ug/L	1	79-00-5	1
1,2,4-Trichlorobenzene	43	5		ug/L	1	120-82-1	1
Tetrachloroethene	42	1		ug/L	1	127-18-4	1
Toluene	44	1		ug/L	1	108-88-3	1
Trichloroethene	50	1		ug/L	1	79-01-6	1
Trichlorofluoromethane	41	1		ug/L	1	75-69-4	1
Vinyl chloride	41	1		ug/L	1	75-01-4	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S43005.04 (continued)
Sample Tag: MWOS-10-MSD_GW-113022

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 02:56, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	44	1		ug/L	1	95-47-6	1
p,m-Xylene*	87	2		ug/L	1		1
Isopropylbenzene	44	1		ug/L	1	98-82-8	1
Cyclohexane	45	1		ug/L	1	110-82-7	1
1,1-Dichloroethane	49	1		ug/L	1	75-34-3	1
1,1-Dichloroethene	43	1		ug/L	1	75-35-4	1
Methyl Acetate	36	10		ug/L	1	79-20-9	1
Methyl cyclohexane	45	1		ug/L	1	108-87-2	1
1,1,2-Trichloro-1,2,2-trifluoroethane	41	1		ug/L	1	76-13-1	1
1,2-Dibromoethane	44	1		ug/L	1	106-93-4	1
1,1,2,2-Tetrachloroethane	44	1		ug/L	1	79-34-5	1
cis-1,3-Dichloropropene	45	1		ug/L	1	10061-01-5	1
trans-1,3-Dichloropropene	46	1		ug/L	1	10061-02-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S43005.05

Sample Tag: Trip Blank_03

Collected Date/Time: 11/30/2022 00:01

Matrix: Water

COC Reference: 154548

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	12/05/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 00:52, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S43005.05 (continued)

Sample Tag: Trip Blank_03

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 00:52, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S43005

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

Project: RACER PNC / 30112891.00005

Submitted: 12/01/2022 15:40 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: _____

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME			
LEXI CRISP; TIFFANY LINDER			
COMPANY			
ARCADIS			
ADDRESS			
28550 CABOT DRIVE #500			
CITY		STATE	ZIP CODE
NOVI		MI	48377
PHONE NO.		P.O. NO.	
614-985-9163		—	
CELL NO.		QUOTE NO.	
—		—	
E-MAIL ADDRESS			
LEXI.CRISP@ARCADIS.COM; TIFFANY.LINDER@ARCADIS.COM			

CONTACT NAME		ACCOUNTS PAYABLE		☐ SAME	
COMPANY					
ARCADIS					
ADDRESS					
630 PLAZA DRIVE #600					
CITY				STATE	ZIP CODE
HIGHLANDS RANCH				CO	80125
PHONE NO.		E-MAIL ADDRESS			
		ACCOUNTS PAYABLE, ADMINISTRATION@ARCADIS.COM			

PROJECT NO./NAME RACER PNC / 30112891.00005	SAMPLER(S) - PLEASE PRINT/SIGN NAME CHRISTINA WEAVER <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 _____	

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

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	SITE													☐ Other _____ Special Instructions		
	DATE	TIME																										
43005.01	11/30/22	1410	MWOS-08_GW-113022	GW	3		3						X															
.02	11/30/22	1602	MWOS-10_GW-113022	GW	3		3						X															
.03	11/30/22	1602	MWOS-10-MS_GW-113022	GW	3		3						X															PERFORM MS
.04	11/30/22	1602	MWOS-10-MSD_GW-113022	GW	3		3						X															PERFORM MSD
.05	11/30/22	—	TRIP BLANK_03	—	1		1						X															TRIP BLANK
				</																								

RELINQUISHED BY:		☒ Sampler	DATE	TIME
SIGNATURE/ORGANIZATION		ARCADIS	11/30/22	A30
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				

RELINQUISHED BY:			DATE	TIME
SIGNATURE/ORGANIZATION			12/01/22	1417
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION			12/1/22	1417

RELINQUISHED BY: SIGNATURE/ORGANIZATION		NOWI COLD STORAGE / ARCADIS		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		Yang Achraf		DATE	TIME
SEAL NO.		SEAL INTACT	INITIALS	NOTES:	TEMP. ON ARRIVAL
2m Chilcat		YES ☒ NO ☐	12/1/22 1540		5.0
SEAL NO.		SEAL INTACT	INITIALS		
		YES ☐ NO ☐			

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

Buy 1.26.23



Analytical Laboratory Report

Report ID: S43006.01(01)
Generated on 12/05/2022

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): S43006.01-S43006.06
Project: RACER PNC / 30112891.00005
Collected Date(s): 11/29/2022 - 12/01/2022
Submitted Date/Time: 12/01/2022 15:40
Sampled by: Gary Schafer
P.O. #: 30112891.00005

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 (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S43006.01	MWF16-05_GW-112922	Groundwater	11/29/22 14:01
S43006.02	MWF16-06_GW-112922	Groundwater	11/29/22 15:01
S43006.03	MW-09-22_GW-120122	Groundwater	12/01/22 11:06
S43006.04	MWF16-18_GW-120122	Groundwater	12/01/22 12:11
S43006.05	MWF16-22_GW-120122	Groundwater	12/01/22 13:21
S43006.06	Trip Blank-04	Water	12/01/22 00:01



Analytical Laboratory Report

Lab Sample ID: S43006.01

Sample Tag: MWF16-05_GW-112922

Collected Date/Time: 11/29/2022 14:01

Matrix: Groundwater

COC Reference: 158110

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	12/05/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 06:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	1,000		ug/L	20	67-64-1	Y
2-Butanone (MEK)	Not detected	500		ug/L	20	78-93-3	Y
Benzene	Not detected	20		ug/L	20	71-43-2	Y
Bromodichloromethane	Not detected	20		ug/L	20	75-27-4	Y
Bromoform	Not detected	20		ug/L	20	75-25-2	Y
Bromomethane	Not detected	100		ug/L	20	74-83-9	Y
Carbon disulfide	Not detected	100		ug/L	20	75-15-0	Y
Carbon tetrachloride	Not detected	20		ug/L	20	56-23-5	Y
Chlorobenzene	Not detected	20		ug/L	20	108-90-7	Y
Chloroethane	Not detected	100		ug/L	20	75-00-3	Y
Chloroform	Not detected	20		ug/L	20	67-66-3	Y
Chloromethane	Not detected	100		ug/L	20	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	100		ug/L	20	96-12-8	Y
1,2-Dichlorobenzene	Not detected	20		ug/L	20	95-50-1	Y
1,2-Dichloroethane	Not detected	20		ug/L	20	107-06-2	Y
1,2-Dichloropropane	Not detected	20		ug/L	20	78-87-5	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
cis-1,2-Dichloroethene	Not detected	20		ug/L	20	156-59-2	Y
Dibromochloromethane	Not detected	100		ug/L	20	124-48-1	Y
Dichlorodifluoromethane	Not detected	100		ug/L	20	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	20		ug/L	20	156-60-5	Y
Ethylbenzene	Not detected	20		ug/L	20	100-41-4	Y
2-Hexanone	Not detected	1,000		ug/L	20	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	1,000		ug/L	20	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	100		ug/L	20	1634-04-4	Y
Methylene chloride	Not detected	100		ug/L	20	75-09-2	Y
Styrene	Not detected	20		ug/L	20	100-42-5	Y
1,1,1-Trichloroethane	Not detected	20		ug/L	20	71-55-6	Y
1,1,2-Trichloroethane	Not detected	20		ug/L	20	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	100		ug/L	20	120-82-1	Y
Tetrachloroethene	730	20		ug/L	20	127-18-4	Y
Toluene	Not detected	20		ug/L	20	108-88-3	Y
Trichloroethene	30	20		ug/L	20	79-01-6	Y
Trichlorofluoromethane	Not detected	20		ug/L	20	75-69-4	Y
Vinyl chloride	Not detected	20		ug/L	20	75-01-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S43006.01 (continued)
Sample Tag: MWF16-05_GW-112922

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 06:20, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	20		ug/L	20	95-47-6	Y
p,m-Xylene*	Not detected	40		ug/L	20		Y
Isopropylbenzene	Not detected	20		ug/L	20	98-82-8	Y
Cyclohexane	Not detected	20		ug/L	20	110-82-7	Y
1,1-Dichloroethane	Not detected	20		ug/L	20	75-34-3	Y
1,1-Dichloroethene	Not detected	20		ug/L	20	75-35-4	Y
Methyl Acetate	Not detected	200		ug/L	20	79-20-9	Y
Methyl cyclohexane	Not detected	20		ug/L	20	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	20		ug/L	20	76-13-1	Y
1,2-Dibromoethane	Not detected	20		ug/L	20	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	20		ug/L	20	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	20		ug/L	20	10061-02-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S43006.02

Sample Tag: MWF16-06_GW-112922

Collected Date/Time: 11/29/2022 15:01

Matrix: Groundwater

COC Reference: 158110

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	12/05/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 05:02, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	10	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	13	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	1	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	19	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	145	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	44	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	8	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S43006.02 (continued)

Sample Tag: MWF16-06_GW-112922

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 05:02, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	61	1		ug/L	1	75-34-3	
1,1-Dichloroethene	8	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S43006.03

Sample Tag: MW-09-22_GW-120122

Collected Date/Time: 12/01/2022 11:06

Matrix: Groundwater

COC Reference: 158110

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	12/05/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 05:22, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	48	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	1	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S43006.03 (continued)
Sample Tag: MW-09-22_GW-120122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 05:22, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S43006.04

Sample Tag: MWF16-18_GW-120122

Collected Date/Time: 12/01/2022 12:11

Matrix: Groundwater

COC Reference: 158110

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	12/05/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 06:39, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	500		ug/L	10	67-64-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	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
cis-1,2-Dichloroethene	90	10		ug/L	10	156-59-2	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
Tetrachloroethene	1,220	10		ug/L	10	127-18-4	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
Trichloroethene	20	10		ug/L	10	79-01-6	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S43006.04 (continued)

Sample Tag: MWF16-18_GW-120122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 06:39, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
Isopropylbenzene	Not detected	10		ug/L	10	98-82-8	Y
Cyclohexane	Not detected	10		ug/L	10	110-82-7	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methyl Acetate	Not detected	100		ug/L	10	79-20-9	Y
Methyl cyclohexane	Not detected	10		ug/L	10	108-87-2	Y
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	10		ug/L	10	76-13-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S43006.05

Sample Tag: MWF16-22_GW-120122

Collected Date/Time: 12/01/2022 13:21

Matrix: Groundwater

COC Reference: 158110

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	12/05/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 05:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	10	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	2	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	78	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	2	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S43006.05 (continued)
Sample Tag: MWF16-22_GW-120122

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 05:41, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S43006.06

Sample Tag: Trip Blank-04

Collected Date/Time: 12/01/2022 00:01

Matrix: Water

COC Reference: 158110

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	12/05/22 11:00	BML	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 01:12, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S43006.06 (continued)

Sample Tag: Trip Blank-04

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/03/22 01:12, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S43006

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

Project: RACER PNC / 30112891.00005

Submitted: 12/01/2022 15:40 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: _____

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME			
Lex, Crisp; Tiffany Linder			
COMPANY			
Arcadis			
ADDRESS			
28550 Carbot DR. Suite 500			
CITY			STATE
Novi			MI
PHONE NO.			ZIP CODE
614-985-9163			48377
CELL NO.		P.O. NO.	
E-MAIL ADDRESS		QUOTE NO.	
Lex.Crisp@arcadis.com / Tiffany.Linder@arcadis.com			

CONTACT NAME		☐ SAME	
COMPANY			
ADDRESS			
CITY		STATE	ZIP CODE
PHONE NO	E-MAIL ADDRESS		

PROJECT NO./NAME Racer PNC / 3011289600005	SAMPLER(S) - PLEASE PRINT/SIGN NAME Gary Schuster / Gary Schuster
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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications

☐ OHIO VAP ☐ Drinking Water

☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York

☐ Other _____

Special Instructions

[illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Gary A. Baker</i>	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>	DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>[Signature]</i>	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 5.0
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

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

Rev 126.22



Analytical Laboratory Report

Report ID: S43109.01(01)
Generated on 12/13/2022

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

Report Summary

Lab Sample ID(s): S43109.01-S43109.03
Project: 30112891.00005 RACER PNC
Collected Date(s): 12/05/2022
Submitted Date/Time: 12/06/2022 08:00
Sampled by: Gary Schafer
P.O. #: 30112891.00005

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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 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 (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S43109.01	Trip Blank 06	Water	12/05/22 00:01
S43109.02	TW-12-22_GW-120522	Groundwater	12/05/22 00:01
S43109.03	MWF16-16_GW-120522	Groundwater	12/05/22 00:01



Analytical Laboratory Report

Lab Sample ID: S43109.01

Sample Tag: Trip Blank 06

Collected Date/Time: 12/05/2022 00:01

Matrix: Water

COC Reference: 155251

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/22 10:30	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 01:10, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S43109.01 (continued)
Sample Tag: Trip Blank 06

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 01:10, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S43109.02

Sample Tag: TW-12-22_GW-120522

Collected Date/Time: 12/05/2022 00:01

Matrix: Groundwater

COC Reference: 155251

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/22 10:30	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 03:23, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	8	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	51	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	3	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	6	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	5	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S43109.02 (continued)
Sample Tag: TW-12-22_GW-120522

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 03:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	13	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	



Analytical Laboratory Report

Lab Sample ID: S43109.03

Sample Tag: MWF16-16_GW-120522

Collected Date/Time: 12/05/2022 00:01

Matrix: Groundwater

COC Reference: 155251

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/12/22 10:30	BDO	

Organics - Volatiles

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 03:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acetone	Not detected	50		ug/L	1	67-64-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Benzene	Not detected	1		ug/L	1	71-43-2	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Bromoform	Not detected	1		ug/L	1	75-25-2	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
cis-1,2-Dichloroethene	2	1		ug/L	1	156-59-2	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
Styrene	Not detected	1		ug/L	1	100-42-5	
1,1,1-Trichloroethane	4	1		ug/L	1	71-55-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
Tetrachloroethene	109	1		ug/L	1	127-18-4	
Toluene	Not detected	1		ug/L	1	108-88-3	
Trichloroethene	4	1		ug/L	1	79-01-6	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
o-Xylene	Not detected	1		ug/L	1	95-47-6	



Analytical Laboratory Report

Lab Sample ID: S43109.03 (continued)

Sample Tag: MWF16-16_GW-120522

Volatile Organics - Arcadis, Method: SW5030C/8260C, Run Date: 12/10/22 03:42, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
p,m-Xylene*	Not detected	2		ug/L	1		
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
Methyl cyclohexane	Not detected	1		ug/L	1	108-87-2	
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	1		ug/L	1	76-13-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	

Merit Laboratories Login Checklist

Lab Set ID:S43109

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

Project: 30112891.00005 RACER PNC

Submitted: 12/06/2022 08:00 Login User: BJB

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 4.0
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: _____

3/31/2022

Ms. Lexi Crisp
Arcadis U.S., Inc.
100 E. Campus View Blvd
Suite 200
Columbus OH 43235

Project Name: RACER PNC

Project #: 30112891.4

Workorder #: 2203666

Dear Ms. Lexi Crisp

The following report includes the data for the above referenced project for sample(s) received on 3/24/2022 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 #: 2203666

Work Order Summary

CLIENT:	Ms. Lexi Crisp Arcadis U.S., Inc. 100 E. Campus View Blvd Suite 200 Columbus, OH 43235	BILL TO:	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
PHONE:		P.O. #	30112891.4
FAX:		PROJECT #	30112891.4 RACER PNC
DATE RECEIVED:	03/24/2022	CONTACT:	Jade White
DATE COMPLETED:	03/31/2022		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SV-06-21_SG-032222	TO-15	5.1 "Hg	10 psi
02A	SV-04-21_SG-032222	TO-15	5.5 "Hg	8.6 psi
03A	SV-05-21_SG-032222	TO-15	5.7 "Hg	9.8 psi
04A	SV-03-21_SG-032222	TO-15	5.1 "Hg	9.7 psi
05A	SV-02-21_SG-032222	TO-15	4.7 "Hg	10 psi
06A	SV-01-21_SG-032222	TO-15	5.7 "Hg	9.9 psi
07A	DUP-01_SG-032222	TO-15	5.3 "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: 03/30/22

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935

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

Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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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# 2203666

Seven 1 Liter Summa Canister samples were received on March 24, 2022. 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



Air Toxics

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

Client Sample ID: SV-06-21_SG-032222

Lab ID#: 2203666-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	2.5	5.4	13

Client Sample ID: SV-04-21_SG-032222

Lab ID#: 2203666-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.97	2.0	5.2	11

Client Sample ID: SV-05-21_SG-032222

Lab ID#: 2203666-03A

No Detections Were Found.

Client Sample ID: SV-03-21_SG-032222

Lab ID#: 2203666-04A

No Detections Were Found.

Client Sample ID: SV-02-21_SG-032222

Lab ID#: 2203666-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	9.8	5.3	53
Tetrachloroethene	1.0	1.4	6.7	9.5

Client Sample ID: SV-01-21_SG-032222

Lab ID#: 2203666-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	1.6	5.6	8.6

Client Sample ID: DUP-01_SG-032222

Lab ID#: 2203666-07A



Air Toxics

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

Client Sample ID: DUP-01_SG-032222

Lab ID#: 2203666-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	9.8	5.4	53
Tetrachloroethene	1.0	1.4	6.9	9.6



Air Toxics

Client Sample ID: SV-06-21_SG-032222

Lab ID#: 2203666-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j032908	Date of Collection:	3/22/22 9:37:00 AM
Dil. Factor:	2.02	Date of Analysis:	3/29/22 01:47 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	2.5	5.4	13
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	96	70-130
4-Bromofluorobenzene	94	70-130



Air Toxics

Client Sample ID: SV-04-21_SG-032222

Lab ID#: 2203666-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j032907	Date of Collection:	3/22/22 10:02:00 AM
Dil. Factor:	1.94	Date of Analysis:	3/29/22 01:14 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.97	Not Detected	2.5	Not Detected
1,1-Dichloroethene	0.97	Not Detected	3.8	Not Detected
cis-1,2-Dichloroethene	0.97	Not Detected	3.8	Not Detected
Trichloroethene	0.97	2.0	5.2	11
trans-1,2-Dichloroethene	0.97	Not Detected	3.8	Not Detected
Tetrachloroethene	0.97	Not Detected	6.6	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: SV-05-21_SG-032222

Lab ID#: 2203666-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j032909	Date of Collection:	3/22/22 10:22:00 AM
Dil. Factor:	2.06	Date of Analysis:	3/29/22 02:21 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	96	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	99	70-130



Air Toxics

Client Sample ID: SV-03-21_SG-032222

Lab ID#: 2203666-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j032906	Date of Collection:	3/22/22 10:42:00 AM
Dil. Factor:	2.00	Date of Analysis:	3/29/22 12:41 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	Not Detected	5.4	Not Detected
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	94	70-130
4-Bromofluorobenzene	98	70-130



Air Toxics

Client Sample ID: SV-02-21_SG-032222

Lab ID#: 2203666-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j032910	Date of Collection:	3/22/22 11:42:00 AM
Dil. Factor:	1.99	Date of Analysis:	3/29/22 02:54 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	9.8	5.3	53
trans-1,2-Dichloroethene	1.0	Not Detected	3.9	Not Detected
Tetrachloroethene	1.0	1.4	6.7	9.5

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	99	70-130



Air Toxics

Client Sample ID: SV-01-21_SG-032222

Lab ID#: 2203666-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j032911	Date of Collection:	3/22/22 11:16:00 AM
Dil. Factor:	2.07	Date of Analysis:	3/29/22 03:27 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	1.6	5.6	8.6
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	96	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	96	70-130



Air Toxics

Client Sample ID: DUP-01_SG-032222

Lab ID#: 2203666-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j032912	Date of Collection:	3/22/22
Dil. Factor:	2.03	Date of Analysis:	3/29/22 04:01 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	9.8	5.4	53
trans-1,2-Dichloroethene	1.0	Not Detected	4.0	Not Detected
Tetrachloroethene	1.0	1.4	6.9	9.6

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	99	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2203666-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j032905a	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/29/22 11:11 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	97	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	99	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 2203666-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j032902	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/29/22 09:15 AM

Compound	%Recovery

Vinyl Chloride	74
1,1-Dichloroethene	81
cis-1,2-Dichloroethene	89
Trichloroethene	97
trans-1,2-Dichloroethene	84
Tetrachloroethene	118

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	101	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 2203666-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j032903	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/29/22 09:46 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	81	70-130
1,1-Dichloroethene	85	70-130
cis-1,2-Dichloroethene	92	70-130
Trichloroethene	98	70-130
trans-1,2-Dichloroethene	89	70-130
Tetrachloroethene	119	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	100	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 2203666-10AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: j032904
Dil. Factor: 1.00

Date of Collection: NA
Date of Analysis: 3/29/22 10:16 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	81	70-130
1,1-Dichloroethene	84	70-130
cis-1,2-Dichloroethene	92	70-130
Trichloroethene	98	70-130
trans-1,2-Dichloroethene	89	70-130
Tetrachloroethene	120	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	100	70-130

6/17/2022

Ms. Lexi Crisp
Arcadis U.S., Inc.
100 E. Campus View Blvd
Suite 200
Columbus OH 43235

Project Name: RACER PNC
Project #: 30112891.00004
Workorder #: 2206233

Dear Ms. Lexi Crisp

The following report includes the data for the above referenced project for sample(s) received on 6/10/2022 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 #: 2206233

Work Order Summary

CLIENT: Ms. Lexi Crisp
Arcadis U.S., Inc.
100 E. Campus View Blvd
Suite 200
Columbus, OH 43235

BILL TO: Accounts Payable
Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

PHONE:

P.O. # 30112891.00004

FAX:

PROJECT # 30112891.00004 RACER PNC

DATE RECEIVED: 06/10/2022

CONTACT: Jade White

DATE COMPLETED: 06/17/2022

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SV-01-21_SG-060822	TO-15	6.3 "Hg	10 psi
02A	SV-06-21_SG-060822	TO-15	7.1 "Hg	9.8 psi
03A	SV-04-21_SG-060822	TO-15	7.6 "Hg	10 psi
04A	SV-05-21_SG-060822	TO-15	6.1 "Hg	9.9 psi
05A	SV-03-21_SG-060822	TO-15	6.1 "Hg	10.1 psi
06A	SV-02-21_SG-060822	TO-15	6.7 "Hg	9.9 psi
07A	DUP-01_SG-060822	TO-15	6.7 "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: 06/17/22

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935

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

Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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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# 2206233

Seven 1 Liter Summa Canister samples were received on June 10, 2022. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

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-060822

Lab ID#: 2206233-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	4.3	5.7	23
Tetrachloroethene	1.1	1.5	7.2	10

Client Sample ID: SV-06-21_SG-060822

Lab ID#: 2206233-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	2.7	5.8	14

Client Sample ID: SV-04-21_SG-060822

Lab ID#: 2206233-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	2.2	6.0	12

Client Sample ID: SV-05-21_SG-060822

Lab ID#: 2206233-04A

No Detections Were Found.

Client Sample ID: SV-03-21_SG-060822

Lab ID#: 2206233-05A

No Detections Were Found.

Client Sample ID: SV-02-21_SG-060822

Lab ID#: 2206233-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	10	5.8	55
Tetrachloroethene	1.1	1.2	7.3	8.2



Air Toxics

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

Client Sample ID: DUP-01_SG-060822

Lab ID#: 2206233-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	11	5.8	57
Tetrachloroethene	1.1	1.8	7.3	12



Air Toxics

Client Sample ID: SV-01-21_SG-060822

Lab ID#: 2206233-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p061617	Date of Collection: 6/8/22 9:26:00 AM
Dil. Factor:	2.13	Date of Analysis: 6/16/22 08:40 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	4.3	5.7	23
trans-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Tetrachloroethene	1.1	1.5	7.2	10

Container Type: 1 Liter Summa Canister

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



Air Toxics

Client Sample ID: SV-06-21_SG-060822

Lab ID#: 2206233-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p061618	Date of Collection:	6/8/22 10:03:00 AM
Dil. Factor:	2.18	Date of Analysis:	6/16/22 09:10 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	2.7	5.8	14
trans-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Tetrachloroethene	1.1	Not Detected	7.4	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	108	70-130



Air Toxics

Client Sample ID: SV-04-21_SG-060822

Lab ID#: 2206233-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p061619	Date of Collection:	6/8/22 10:23:00 AM
Dil. Factor:	2.25	Date of Analysis:	6/16/22 09:39 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	2.2	6.0	12
trans-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Tetrachloroethene	1.1	Not Detected	7.6	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	107	70-130
4-Bromofluorobenzene	109	70-130



Air Toxics

Client Sample ID: SV-05-21_SG-060822

Lab ID#: 2206233-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p061620	Date of Collection: 6/8/22 10:44:00 AM
Dil. Factor:	2.10	Date of Analysis: 6/16/22 10:09 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	Not Detected	5.6	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.2	Not Detected
Tetrachloroethene	1.0	Not Detected	7.1	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	108	70-130



Air Toxics

Client Sample ID: SV-03-21_SG-060822

Lab ID#: 2206233-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p061621	Date of Collection:	6/8/22 11:03:00 AM
Dil. Factor:	2.12	Date of Analysis:	6/16/22 10:38 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	Not Detected	5.7	Not Detected
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	101	70-130
1,2-Dichloroethane-d4	107	70-130
4-Bromofluorobenzene	109	70-130



Air Toxics

Client Sample ID: SV-02-21_SG-060822

Lab ID#: 2206233-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p061622	Date of Collection:	6/8/22 11:28:00 AM
Dil. Factor:	2.15	Date of Analysis:	6/16/22 11:08 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	10	5.8	55
trans-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Tetrachloroethene	1.1	1.2	7.3	8.2

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	107	70-130



Air Toxics

Client Sample ID: DUP-01_SG-060822

Lab ID#: 2206233-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p061623	Date of Collection:	6/8/22
Dil. Factor:	2.16	Date of Analysis:	6/16/22 11:37 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	11	5.8	57
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	104	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	111	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2206233-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p061605c	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 6/16/22 11:37 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	102	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	102	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 2206233-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p061602	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 6/16/22 09:46 AM

Compound	%Recovery

Vinyl Chloride	88
1,1-Dichloroethene	91
cis-1,2-Dichloroethene	104
Trichloroethene	100
trans-1,2-Dichloroethene	95
Tetrachloroethene	112

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	106	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 2206233-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p061603	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 6/16/22 10:14 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	95	70-130
1,1-Dichloroethene	101	70-130
cis-1,2-Dichloroethene	111	70-130
Trichloroethene	103	70-130
trans-1,2-Dichloroethene	106	70-130
Tetrachloroethene	119	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	106	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 2206233-10AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p061604	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 6/16/22 10:43 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	95	70-130
1,1-Dichloroethene	103	70-130
cis-1,2-Dichloroethene	113	70-130
Trichloroethene	105	70-130
trans-1,2-Dichloroethene	105	70-130
Tetrachloroethene	116	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	102	70-130

10/3/2022

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

Project Name: Racer PNC
Project #: 30112891.00004
Workorder #: 2209642

Dear Ms. Lexi Crisp

The following report includes the data for the above referenced project for sample(s) received on 9/26/2022 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 #: 2209642

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. #	30112891.00004
FAX:		PROJECT #	30112891.00004 Racer PNC
DATE RECEIVED:	09/26/2022	CONTACT:	Jade White
DATE COMPLETED:	10/03/2022		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SV-02-21_SG-092222	TO-15	5.9 "Hg	10 psi
02A	SV-06-21_SG-092222	TO-15	4.9 "Hg	9.8 psi
03A	SV-04-21_SG-092222	TO-15	6.7 "Hg	9.7 psi
04A	SV-05-21_SG-092222	TO-15	7.1 "Hg	10.1 psi
05A	SV-03-21_SG-092222	TO-15	5.7 "Hg	10 psi
06A	SV-01-21_SG-092222	TO-15	7.1 "Hg	10.1 psi
07A	DUP-01_SG-092222	TO-15	5.7 "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: 10/02/22

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935

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

Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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# 2209642

Seven 1 Liter Summa Canister samples were received on September 26, 2022. 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-05-21_SG-092222 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



Air Toxics

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

Client Sample ID: SV-02-21_SG-092222

Lab ID#: 2209642-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	10	5.6	55

Client Sample ID: SV-06-21_SG-092222

Lab ID#: 2209642-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	3.1	5.3	16

Client Sample ID: SV-04-21_SG-092222

Lab ID#: 2209642-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	2.7	5.8	14

Client Sample ID: SV-05-21_SG-092222

Lab ID#: 2209642-04A

No Detections Were Found.

Client Sample ID: SV-03-21_SG-092222

Lab ID#: 2209642-05A

No Detections Were Found.

Client Sample ID: SV-01-21_SG-092222

Lab ID#: 2209642-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	2.1	5.9	11
Tetrachloroethene	1.1	1.9	7.5	13

Client Sample ID: DUP-01_SG-092222

Lab ID#: 2209642-07A



Air Toxics

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

Client Sample ID: DUP-01_SG-092222

Lab ID#: 2209642-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.0	10	5.6	56



Air Toxics

Client Sample ID: SV-02-21_SG-092222

Lab ID#: 2209642-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092722	Date of Collection: 9/22/22 12:54:00 PM
Dil. Factor:	2.09	Date of Analysis: 9/27/22 07:46 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	4.1	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Trichloroethene	1.0	10	5.6	55
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrachloroethene	1.0	Not Detected	7.1	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	113	70-130
4-Bromofluorobenzene	85	70-130



Air Toxics

Client Sample ID: SV-06-21_SG-092222

Lab ID#: 2209642-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092723	Date of Collection:	9/22/22 1:33:00 PM
Dil. Factor:	1.99	Date of Analysis:	9/27/22 08:13 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	3.1	5.3	16
trans-1,2-Dichloroethene	1.0	Not Detected	3.9	Not Detected
Tetrachloroethene	1.0	Not Detected	6.7	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	115	70-130
4-Bromofluorobenzene	83	70-130



Air Toxics

Client Sample ID: SV-04-21_SG-092222

Lab ID#: 2209642-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092724	Date of Collection:	9/22/22 2:02:00 PM
Dil. Factor:	2.14	Date of Analysis:	9/27/22 08:39 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	5.8	14
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	103	70-130
1,2-Dichloroethane-d4	115	70-130
4-Bromofluorobenzene	82	70-130



Air Toxics

Client Sample ID: SV-05-21_SG-092222

Lab ID#: 2209642-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092725	Date of Collection:	9/22/22 2:26:00 PM
Dil. Factor:	2.21	Date of Analysis:	9/27/22 09:06 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	105	70-130
1,2-Dichloroethane-d4	113	70-130
4-Bromofluorobenzene	83	70-130



Air Toxics

Client Sample ID: SV-03-21_SG-092222

Lab ID#: 2209642-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092726	Date of Collection:	9/22/22 2:48:00 PM
Dil. Factor:	2.07	Date of Analysis:	9/27/22 09:33 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	106	70-130
1,2-Dichloroethane-d4	118	70-130
4-Bromofluorobenzene	83	70-130



Air Toxics

Client Sample ID: SV-01-21_SG-092222

Lab ID#: 2209642-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092727	Date of Collection:	9/22/22 3:15:00 PM
Dil. Factor:	2.21	Date of Analysis:	9/27/22 09:59 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	2.1	5.9	11
trans-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Tetrachloroethene	1.1	1.9	7.5	13

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	114	70-130
4-Bromofluorobenzene	84	70-130



Air Toxics

Client Sample ID: DUP-01_SG-092222

Lab ID#: 2209642-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092728	Date of Collection:	9/22/22
Dil. Factor:	2.07	Date of Analysis:	9/27/22 10:26 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	10	5.6	56
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	105	70-130
1,2-Dichloroethane-d4	114	70-130
4-Bromofluorobenzene	83	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2209642-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092706c	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 9/27/22 08:46 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	107	70-130
1,2-Dichloroethane-d4	116	70-130
4-Bromofluorobenzene	80	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 2209642-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092702	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 9/27/22 05:42 AM

Compound	%Recovery

Vinyl Chloride	116
1,1-Dichloroethene	100
cis-1,2-Dichloroethene	102
Trichloroethene	105
trans-1,2-Dichloroethene	103
Tetrachloroethene	86

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	91	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 2209642-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092703	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 9/27/22 06:06 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	114	70-130
1,1-Dichloroethene	100	70-130
cis-1,2-Dichloroethene	100	70-130
Trichloroethene	100	70-130
trans-1,2-Dichloroethene	102	70-130
Tetrachloroethene	88	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	92	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 2209642-10AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	a092704	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 9/27/22 06:30 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	113	70-130
1,1-Dichloroethene	99	70-130
cis-1,2-Dichloroethene	100	70-130
Trichloroethene	101	70-130
trans-1,2-Dichloroethene	103	70-130
Tetrachloroethene	88	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	107	70-130
4-Bromofluorobenzene	92	70-130

12/16/2022

Ms. Lexi Crisp

Arcadis U.S., Inc.

7575 Huntington Park Drive

Suite 130

Columbus OH 43235

Project Name: RACER PNC

Project #: 30112891.00004

Workorder #: 2211760

Dear Ms. Lexi Crisp

The following report includes the data for the above referenced project for sample(s) received on 11/29/2022 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 #: 2211760

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. #	30112891.00004
FAX:		PROJECT #	30112891.00004 RACER PNC
DATE RECEIVED:	11/29/2022	CONTACT:	Jade White
DATE COMPLETED:	12/15/2022		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SV-01-21_SG-112822	TO-15	4.5 "Hg	10 psi
02A	SV-06-21_SG-112822	TO-15	5.0 "Hg	10 psi
03A	SV-04-21_SG-112822	TO-15	5.5 "Hg	10 psi
04A	SV-05-21_SG-112822	TO-15	5.0 "Hg	10 psi
05A	SV-03-21_SG-112822	TO-15	4.5 "Hg	10 psi
06A	SV-02-21_SG-112822	TO-15	5.0 "Hg	10 psi
07A	DUP-01_SG-112822	TO-15	4.5 "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: 12/15/22

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935

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

Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
EPA Method TO-15
Arcadis U.S., Inc.
Workorder# 2211760

Seven 1 Liter Summa Canister samples were received on November 29, 2022. 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

Dilution was performed in all samples due to the presence of high level non-target species.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

N - The identification is based on presumptive evidence.

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

CN - See Case Narrative.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue



Air Toxics

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

Client Sample ID: SV-01-21_SG-112822

Lab ID#: 2211760-01A

No Detections Were Found.

Client Sample ID: SV-06-21_SG-112822

Lab ID#: 2211760-02A

No Detections Were Found.

Client Sample ID: SV-04-21_SG-112822

Lab ID#: 2211760-03A

No Detections Were Found.

Client Sample ID: SV-05-21_SG-112822

Lab ID#: 2211760-04A

No Detections Were Found.

Client Sample ID: SV-03-21_SG-112822

Lab ID#: 2211760-05A

No Detections Were Found.

Client Sample ID: SV-02-21_SG-112822

Lab ID#: 2211760-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	4.0	10	22	55

Client Sample ID: DUP-01_SG-112822

Lab ID#: 2211760-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	4.0	11	21	60



Air Toxics

Client Sample ID: SV-01-21_SG-112822

Lab ID#: 2211760-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j121407	Date of Collection: 11/28/22 12:37:00 P
Dil. Factor:	17.2	Date of Analysis: 12/14/22 02:34 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	8.6	Not Detected	22	Not Detected
1,1-Dichloroethene	8.6	Not Detected	34	Not Detected
cis-1,2-Dichloroethene	8.6	Not Detected	34	Not Detected
Trichloroethene	8.6	Not Detected	46	Not Detected
trans-1,2-Dichloroethene	8.6	Not Detected	34	Not Detected
Tetrachloroethene	8.6	Not Detected	58	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	89	70-130
4-Bromofluorobenzene	98	70-130



Air Toxics

Client Sample ID: SV-06-21_SG-112822

Lab ID#: 2211760-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j121408	Date of Collection:	11/28/22 1:07:00 PM
Dil. Factor:	16.1	Date of Analysis:	12/14/22 03:04 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	8.0	Not Detected	20	Not Detected
1,1-Dichloroethene	8.0	Not Detected	32	Not Detected
cis-1,2-Dichloroethene	8.0	Not Detected	32	Not Detected
Trichloroethene	8.0	Not Detected	43	Not Detected
trans-1,2-Dichloroethene	8.0	Not Detected	32	Not Detected
Tetrachloroethene	8.0	Not Detected	55	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	89	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: SV-04-21_SG-112822

Lab ID#: 2211760-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j121409	Date of Collection:	11/28/22 1:35:00 PM
Dil. Factor:	16.4	Date of Analysis:	12/14/22 03:34 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	8.2	Not Detected	21	Not Detected
1,1-Dichloroethene	8.2	Not Detected	32	Not Detected
cis-1,2-Dichloroethene	8.2	Not Detected	32	Not Detected
Trichloroethene	8.2	Not Detected	44	Not Detected
trans-1,2-Dichloroethene	8.2	Not Detected	32	Not Detected
Tetrachloroethene	8.2	Not Detected	56	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: SV-05-21_SG-112822

Lab ID#: 2211760-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j121410	Date of Collection:	11/28/22 1:57:00 PM
Dil. Factor:	16.1	Date of Analysis:	12/14/22 04:04 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	8.0	Not Detected	20	Not Detected
1,1-Dichloroethene	8.0	Not Detected	32	Not Detected
cis-1,2-Dichloroethene	8.0	Not Detected	32	Not Detected
Trichloroethene	8.0	Not Detected	43	Not Detected
trans-1,2-Dichloroethene	8.0	Not Detected	32	Not Detected
Tetrachloroethene	8.0	Not Detected	55	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: SV-03-21_SG-112822

Lab ID#: 2211760-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j121411	Date of Collection:	11/28/22 2:16:00 PM
Dil. Factor:	19.8	Date of Analysis:	12/14/22 04:34 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	9.9	Not Detected	25	Not Detected
1,1-Dichloroethene	9.9	Not Detected	39	Not Detected
cis-1,2-Dichloroethene	9.9	Not Detected	39	Not Detected
Trichloroethene	9.9	Not Detected	53	Not Detected
trans-1,2-Dichloroethene	9.9	Not Detected	39	Not Detected
Tetrachloroethene	9.9	Not Detected	67	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	89	70-130
4-Bromofluorobenzene	99	70-130



Air Toxics

Client Sample ID: SV-02-21_SG-112822

Lab ID#: 2211760-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j121412	Date of Collection:	11/28/22 2:39:00 PM
Dil. Factor:	8.06	Date of Analysis:	12/14/22 05:05 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	4.0	Not Detected	10	Not Detected
1,1-Dichloroethene	4.0	Not Detected	16	Not Detected
cis-1,2-Dichloroethene	4.0	Not Detected	16	Not Detected
Trichloroethene	4.0	10	22	55
trans-1,2-Dichloroethene	4.0	Not Detected	16	Not Detected
Tetrachloroethene	4.0	Not Detected	27	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	98	70-130



Air Toxics

Client Sample ID: DUP-01_SG-112822

Lab ID#: 2211760-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j121413	Date of Collection:	11/28/22
Dil. Factor:	7.91	Date of Analysis:	12/14/22 05:35 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	4.0	Not Detected	10	Not Detected
1,1-Dichloroethene	4.0	Not Detected	16	Not Detected
cis-1,2-Dichloroethene	4.0	Not Detected	16	Not Detected
Trichloroethene	4.0	11	21	60
trans-1,2-Dichloroethene	4.0	Not Detected	16	Not Detected
Tetrachloroethene	4.0	Not Detected	27	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	90	70-130
4-Bromofluorobenzene	98	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2211760-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j121405d	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/14/22 12:38 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	93	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 2211760-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j121402	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/14/22 11:04 AM

Compound	%Recovery

Vinyl Chloride	116
1,1-Dichloroethene	103
cis-1,2-Dichloroethene	95
Trichloroethene	95
trans-1,2-Dichloroethene	107
Tetrachloroethene	110

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	92	70-130
1,2-Dichloroethane-d4	88	70-130
4-Bromofluorobenzene	104	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 2211760-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	j121403	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/14/22 11:34 AM

Compound	%Recovery	Method Limits
Vinyl Chloride	119	70-130
1,1-Dichloroethene	106	70-130
cis-1,2-Dichloroethene	97	70-130
Trichloroethene	95	70-130
trans-1,2-Dichloroethene	109	70-130
Tetrachloroethene	106	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	88	70-130
4-Bromofluorobenzene	104	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 2211760-10AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: j121404

Date of Collection: NA

Dil. Factor: 1.00

Date of Analysis: 12/14/22 12:05 PM

Compound	%Recovery	Method Limits
Vinyl Chloride	122	70-130
1,1-Dichloroethene	107	70-130
cis-1,2-Dichloroethene	95	70-130
Trichloroethene	95	70-130
trans-1,2-Dichloroethene	110	70-130
Tetrachloroethene	106	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	88	70-130
4-Bromofluorobenzene	102	70-130

Appendix B

Groundwater and Soil Vapor Sampling Logs

Groundwater Sampling Form



Project Number	30112891	Well ID	MW-02-17	Date	03/22/2022		
Project Name/Location	RACER PNC		Weather(°F)	41.0 degrees F and Cloudy. The wind is blowing E/SE 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)	25.42	Total Depth (ft-bmp)	29.3	Water Column (ft)	3.88	Gallons in Well	0.63
Purge Start	13:55	Pump Intake (ft-bmp)	28	Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	14:45	Volumes Purged	2.38	Sample ID	MW-02-17_GW-032222	Sampled by	Christina Weaver
Sample Time	14:40	Gallons Purged	1.50	Replicate/ Code No.	DUP-02_GW-032222	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
13:58	0	0	150	25.42	--	7.04	11.6	25	0.76	11.6	112.2	--	--
14:03	5	5	150	25.42	--	7.05	1.11		0.61	11.5	81.4	--	--
14:08	5	10	150	25.42	--	7.07	1.12	15.6	0.32	11.6	41.1	--	--
14:13	5	15	150	25.42	--	7.08	1.14	15.6	0.23	11.6	21.3	--	--
14:18	5	20	150	25.42	--	7.08	1.15	11.5	0.19	11.7	4.4	--	--
14:23	5	25	150	25.42	--	7.1	1.16	8.55	0.26	11.4	-9.2	--	--
14:28	5	30	150	25.42	--	7.11	1.15	8.24	0.26	11.1	-27.3	--	--
14:33	5	35	150	25.42	--	7.12	1.17	8.35	0.27	11.2	-33.8	--	--
14:38	5	40	150	25.42	--	7.11	1.17	8.25	0.26	11.2	-36	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: By gate in trailer parking	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	30112891	Well ID	MW-05-18	Date	03/22/2022
Project Name/Location	RACER PNC		Weather(°F)	39.9 degrees F and Cloudy. The wind is blowing E/SE at 13.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.75	Total Depth (ft-bmp)	33.6	Water Column (ft)	6.85
Purge Start	12:42	Pump Intake (ft-bmp)	32	Purge Method	Low-Flow
Purge End	13:25	Volumes Purged	1.35	Sample ID	MW-05-18_GW-032222
Sample Time	13:20	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.11
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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	150	26.75	0.16	7.16	0.562	12.1	0.61	11.8	108.7	--	--
12:51	5	5	150	26.75	--	7.27	0.554	6.27	0.37	11.7	100.1	--	--
12:56	5	10	150	26.75	--	7.27	0.547	5.5	0.35	11.3	98.1	--	--
13:01	5	15	150	26.75	--	7.26	0.538	4.27	0.3	11.7	96.7	--	--
13:06	5	20	150	26.75	--	7.26	0.532	3.45	0.23	11.7	95.3	--	--
13:11	5	25	150	26.75	--	7.27	0.525	3.85	0.21	11.8	93.6	--	--
13:16	5	30	150	26.75	--	7.29	0.525	4.25	0.22	11.8	91.4	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: Onsite	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: 2035

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	30112891	Well ID	MW-08-21	Date	03/22/2022
Project Name/Location	RACER PNC		Weather(°F)	40 °F, Overcast, E winds at 14 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.30	Total Depth (ft-bmp)	30.3	Water Column (ft)	4
Purge Start	15:00	Pump Intake (ft-bmp)	29	Purge Method	Low-Flow
Purge End	15:45	Volumes Purged	1.54	Sample ID	MW-08-21_GW-032222
Sample Time	15:40	Gallons Purged	1.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.65
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
15:05	0	0	150	26.30	--	7.46	0.73	0.76	2.5	11.8	-11.4	--	--
15:10	5	5	150	26.30	--	7.41	0.75	2.3	1.95	12.3	-8.1	--	--
15:15	5	10	150	26.30	--	7.42	0.78	1.8	1.93	12.4	-2.3	--	--
15:20	5	15	150	26.30	--	7.4	0.75	1.5	1.85	12.5	-3.8	--	--
15:25	5	20	150	26.30	--	7.41	0.74	1.35	1.83	12.4	-2.9	--	--
15:30	5	25	150	26.30	--	7.39	0.75	1.9	1.78	12.4	-0.2	--	--
15:35	5	30	150	26.30	--	7.37	0.75	1.8	1.73	12.3	1.9	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: NA

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: Onsite near curb	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	30075936	Well ID	MW-07-20	Date	03/22/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	39.9 degrees F and Cloudy. The wind is blowing E/SE at 13.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.16	Total Depth (ft-bmp)	30.2	Water Column (ft)	4.04
Purge Start	12:48	Pump Intake (ft-bmp)	26.17	Purge Method	Low-Flow
Purge End	13:37	Volumes Purged	2.27	Sample ID	MW-07-20_GW-032222
Sample Time	13:26	Gallons Purged	1.50	Replicate/ Code No.	MW-07-20-MW_GW-032222, MW-07-20-MSD_GW-032222
				Well Casing Material	PVC
				Gallons in Well	0.66
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
12:50	0	0	120	26.17	--	7.42	0.85	1.16	3.5	7.8	131.5	--	--
12:55	5	5	120	26.17	--	7.32	0.83	0.8	2.75	10.7	130.5	--	--
13:00	5	10	120	26.17	--	7.49	0.83	0.77	2.56	11.2	120.9	--	--
13:05	5	15	120	26.17	--	7.49	0.83	1.18	2.39	11.3	120.3	--	--
13:10	5	20	120	26.17	--	7.48	0.83	0.88	2.33	11.4	121.3	--	--
13:15	5	25	120	26.17	--	7.46	0.84	0.31	3.52	11.4	122.4	--	--
13:20	5	30	120	26.17	--	7.45	0.84	0.64	3.53	11.3	123.2	--	--
13:25	5	35	120	26.17	--	7.43	0.84	0.37	3.51	11.2	124	Clear	None

Constituent Sampled	Container	Number	Preservative

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	30075936	Well ID	MWF12-01R	Date	03/22/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	Overcast winds from west 8-11 mph temp 45	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	19.95	Total Depth (ft-bmp)	23.23	Water Column (ft)	3.28
Purge Start	14:18	Pump Intake (ft-bmp)	19.96	Purge Method	Low-Flow
Purge End	15:06	Volumes Purged	2.83	Sample ID	MWF12-02R_GW-032222
Sample Time	15:01	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.53
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
14:20	0	0	120	19.96	--	7.04	1.87	0.64	0.84	10.3	147.4	--	--
14:25	5	5	120	19.96	--	6.97	1.88	0.15	0.47	10.3	149.3	--	--
14:30	5	10	120	19.96	--	7.01	1.88	0.02	0.33	10.2	146.6	--	--
14:35	5	15	120	19.96	--	7.04	1.88	0.27	0.31	10.2	144.4	--	--
14:40	5	20	120	19.96	--	7.07	1.88	0.03	0.29	10.2	142.7	--	--
14:45	5	25	120	19.96	--	7.07	1.88	0.17	0.28	10.1	142.3	--	--
14:50	5	30	120	19.96	--	7.09	1.88	0.33	0.4	10.2	141	--	--
14:55	5	35	120	19.96	--	7.09	1.89	0.1	0.38	10.1	140.5	--	--
15:00	5	40	120	19.96	--	7.09	1.89	0.02	0.39	10.1	139.9	Clear	None

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	30075936	Well ID	MWF12-02R	Date	03/22/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	Overcast winds NE 8-11 mph temp 37	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	13.06	Total Depth (ft-bmp)	22.5	Water Column (ft)	9.44
Purge Start	15:23	Pump Intake (ft-bmp)	13.07	Purge Method	Low-Flow
Purge End	16:06	Volumes Purged	0.98	Sample ID	MWF12-02R_GW-032222
Sample Time	16:01	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.53
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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	120	13.07	--	7.27	1.1	11.1	0.74	11.1	145	--	--
15:30	5	5	120	13.07	--	7.26	1.12	8.63	0.31	11.1	137.5	--	--
15:35	5	10	120	13.07	--	7.23	1.13	5.4	0.26	11.2	131.4	--	--
15:40	5	15	120	13.07	--	7.22	1.14	5.18	0.23	11.2	126.9	--	--
15:45	5	20	120	13.07	--	7.22	1.15	3.69	0.21	11.3	120.3	--	--
15:50	5	25	120	13.07	--	7.22	1.14	3.05	0.22	11.3	117.7	--	--
15:55	5	30	120	13.07	--	7.21	1.15	2.61	0.22	11.4	108.7	--	--
16:00	5	35	120	13.07	--	7.21	1.16	2.1	0.21	11.4	108	Clear	None

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	30075936	Well ID	MWF16-06	Date	03/23/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	44.1 degrees F and Cloudy. The wind is blowing E/SE 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)	13.40	Total Depth (ft-bmp)	28.65	Water Column (ft)	15.25
Gallons in Well	2.48				
Purge Start	15:57	Pump Intake (ft-bmp)	13.56	Purge Method	Low-Flow
Purge Equipment	Peristaltic				
Purge End	16:41	Volumes Purged	0.60	Sample ID	MWF16-06_GW-032322
Sampled by	Gary Schafer				
Sample Time	16:36	Gallons Purged	1.50	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
16:00	0	0	100	13.52	--	7.78	0.501	17.5	4.33	10.6	131.5	--	--
16:05	5	5	100	13.54	--	7.75	0.51	6.29	4.23	10.6	133.8	--	--
16:10	5	10	100	13.56	--	7.74	0.508	2.31	4.13	10.6	135.6	--	--
16:15	5	15	100	13.56	--	7.71	0.507	2.32	4.05	10.6	138.8	--	--
16:20	5	20	100	13.56	--	7.72	0.507	3.22	4.04	10.6	139.3	--	--
16:25	5	25	100	13.56	--	7.7	0.507	2.25	3.97	10.7	141.3	--	--
16:30	5	30	100	13.56	--	7.72	0.506	1.36	3.99	10.6	140.8	--	--
16:35	5	35	100	13.56	--	7.71	51	1.11	3.97	10.6	141.6	Clear	None

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: MWF16-06	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	30075936	Well ID	MWF16-19	Date	03/23/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	39.9 degrees F and Cloudy and Windy. The wind is blowing E/SE at 21.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	12.39	Total Depth (ft-bmp)	26.8	Water Column (ft)	14.41
Purge Start	14:23	Pump Intake (ft-bmp)		Purge Method	Low-Flow
Purge End	15:31	Volumes Purged	0.85	Sample ID	MWF16-19_GW-032322
Sample Time	15:26	Gallons Purged	2.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	2.34
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
14:25	0	0	100	13.19	--	7.01	0.604	47.6	0.8	10.7	168.2	--	--
14:30	5	5	100	13.45	--	7.04	0.602	39	0.66	10.7	163.5	--	--
14:35	5	10	100	13.60	--	7.1	0.602	31.6	0.63	10.5	156.7	--	--
14:40	5	15	100	13.60	--	7.13	0.603	29.6	0.57	10.2	153.2	--	--
14:45	5	20	100	13.60	--	7.16	0.603	28.1	0.55	10.3	149.3	--	--
14:50	5	25	100	13.60	--	7.22	0.605	25	0.54	10.2	143.6	--	--
14:55	5	30	100	13.60	--	7.26	0.607	27.8	0.51	10.3	137.6	--	--
15:00	5	35	100	13.60	--	7.21	0.605	23.3	0.52	10	139.2	--	--
15:05	5	40	100	13.60	--	7.2	0.606	38	5.09	10.1	138.4	--	--
15:10	5	45	100	13.60	--	7.23	0.607	36.1	4.94	10.1	135.4	--	--
15:15	5	50	100	13.60	--	7.31	0.608	28.7	4.24	10.5	124.7	--	--
15:20	5	55	100	13.60	--	7.31	0.608	26.9	4.26	10.5	123.6	--	--
15:25	5	60	100	13.60	--	7.28	0.608	22.6	3.58	10.5	120.8	Clear	None

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: 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	30075936	Well ID	MWF7-02	Date	03/23/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	37.0 degrees F and Light Rain. The wind is blowing E/SE at 17.2 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	18.95	Total Depth (ft-bmp)	23	Water Column (ft)	4.05
Purge Start	10:43	Pump Intake (ft-bmp)	19	Purge Method	Low-Flow
Purge End	11:26	Volumes Purged	2.27	Sample ID	MWF7-02_GW-032322
Sample Time	11:21	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.66
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
10:45	0	0	120	19.00	--	7.21	0.683	3.3	3.57	10.5	197.6	--	--
10:50	5	5	120	19.00	--	7.22	0.677	0.22	3.49	10.5	194.1	--	--
10:55	5	10	120	19.00	--	7.29	0.685	0.21	3.46	10.5	185.9	--	--
11:00	5	15	120	19.00	--	7.29	0.686	0.02	3.46	10.6	184.5	--	--
11:05	5	20	120	19.00	--	7.33	0.674	0.02	3.52	10.6	179.1	--	--
11:10	5	25	120	19.00	--	7.33	0.676	0.02	3.52	10.6	178.7	--	--
11:15	5	30	120	19.00	--	7.33	0.677	3.09	3.55	10.6	176.6	--	--
11:20	5	35	120	19.00	--	7.34	0.679	2.61	3.54	10.6	173.3	Clear	None

Comments: Had to bail out 6 inches of water in vault, before opening j-plug

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: MWF7-02	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	30075936	Well ID	MWF7-03	Date	03/23/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	37.9 degrees F and Cloudy.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	20.83	Total Depth (ft-bmp)	32.52	Water Column (ft)	11.69
Purge Start	12:08	Pump Intake (ft-bmp)	20.83	Purge Method	Low-Flow
Purge End	13:17	Volumes Purged	1.05	Sample ID	MWF7-03_GW-032322
Sample Time	13:11	Gallons Purged	2.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.9
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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	100	20.83	--	6.89	0.76	42.2	2.2	10.1	20.2	--	--
12:15	5	5	100	20.83	--	6.98	0.82	30.4	1.65	10.2	-9.5	--	--
12:20	5	10	100	20.83	--	7.01	0.83	35.3	1.53	10.4	-17.8	--	--
12:25	5	15	100	20.83	--	7.05	0.83	29.1	1.54	10.4	-23.9	--	--
12:30	5	20	100	20.83	--	7.08	0.83	28.1	1.4	10.6	-28.5	--	--
12:35	5	25	100	20.83	--	7.09	0.83	27.7	1.39	10.6	-29.9	--	--
12:40	5	30	100	20.83	--	7.11	0.83	26	1.36	10.5	-31.1	--	--
12:45	5	35	100	20.83	--	7.1	0.83	26.1	1.3	10.7	-31.3	--	--
12:50	5	40	100	20.83	--	7.14	0.83	23.4	1.25	10.7	-33.1	--	--
12:55	5	45	100	20.83	--	7.13	0.83	22.6	1.19	10.7	-32.7	--	--
13:00	5	50	100	20.83	--	7.15	0.83	30	1.2	10.7	-34.5	--	--
13:05	5	55	100	20.83	--	7.16	0.83	28.6	1.2	10.9	-35	--	--
13:10	5	60	100	20.83	--	7.16	0.83	24.1	1.18	10.9	-35.2	Slight turbid	None

Comments: Vault cover is broken see picture

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: Good condition, 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	30075936	Well ID	MWOS-09R	Date	03/22/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	37.9 degrees F and Cloudy. The wind is blowing E at 12.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.80	Total Depth (ft-bmp)	32.22	Water Column (ft)	5.42
Purge Start	11:03	Pump Intake (ft-bmp)	26.82	Purge Method	Low-Flow
Purge End	12:00	Volumes Purged	1.70	Sample ID	MWOS-09_GW-032222
Sample Time	11:51	Gallons Purged	1.50	Replicate/ Code No.	DUP-01_GW-032222
				Well Casing Material	PVC
				Gallons in Well	0.88
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
11:05	0	0	120	26.80	--	7.05	0.88	19.3	0.89	10.9	84.1	--	--
11:10	5	5	120	26.82	--	7.01	0.88	13.1	0.66	11	77.2	--	--
11:15	5	10	120	26.82	--	7.06	0.88	9.38	0.56	11.1	67.5	--	--
11:20	5	15	120	26.82	--	7.15	0.89	8.29	0.53	11.3	56.2	--	--
11:25	5	20	120	26.82	--	7.16	0.89	8.07	0.46	11.3	53	--	--
11:30	5	25	120	26.82	--	7.15	0.89	6.74	0.46	11.4	50.9	--	--
11:35	5	30	120	26.82	--	7.16	0.89	5.16	0.46	11.4	51.4	--	--
11:40	5	35	120	26.82	--	7.16	0.89	7.54	0.78	11.5	49.3	--	--
11:45	5	40	120	26.82	--	7.17	0.89	5.45	0.77	11.4	48.5	--	--
11:50	5	45	120	26.82	--	7.17	0.9	4.24	0.76	11.3	48.6	Clear	None

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	30075936	Well ID	MWOS-10	Date	03/22/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	37.0 degrees F and Cloudy. The wind is blowing E at 11.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	27.99	Total Depth (ft-bmp)	32.76	Water Column (ft)	4.77
Purge Start	09:17	Pump Intake (ft-bmp)	28	Purge Method	Low-Flow
Purge End	10:26	Volumes Purged	2.56	Sample ID	MWOS-10_GW-032222
Sample Time	10:21	Gallons Purged	2.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.78
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
09:20	0	0	150	28.00	--	7.34	1.21	125	2.3	11.7	41.1	--	--
09:25	5	5	150	28.00	--	7.37	1.14	87	1.81	12.2	21.4	--	--
09:30	5	10	150	28.00	--	7.36	1.14	64.2	1.64	12.3	18.9	--	--
09:35	5	15	150	28.00	--	7.34	1.14	52.6	1.57	12.2	20	--	--
09:40	5	20	150	28.00	--	7.33	1.14	47	1.51	12.2	21.7	--	--
09:45	5	25	150	28.00	--	7.31	1.14	39	1.53	12.2	24.5	--	--
09:50	5	30	150	28.00	--	7.31	1.13	28.7	1.42	12.2	27.2	--	--
09:55	5	35	150	28.00	--	7.31	1.13	55	1.42	12.3	27.4	--	--
10:00	5	40	150	28.00	--	7.31	1.14	42.1	1.45	12.2	25.4	--	--
10:05	5	45	150	28.00	--	7.31	1.14	21	1.46	12.2	26.5	--	--
10:10	5	50	150	28.00	--	7.3	1.15	19.7	1.48	12	28.4	--	--
10:15	5	55	150	28.00	--	7.31	1.14	15.5	1.49	12	32.1	--	--
10:20	5	60	150	28.00	--	7.3	1.14	13.2	1.47	12	26.1	Clear	None

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	30075936	Well ID	Unknown-01	Date	03/23/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	37.0 degrees F and Light Rain. The wind is blowing E/SE 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)	18.03	Total Depth (ft-bmp)	24.08	Water Column (ft)	6.05
Gallons in Well	0.98				
Purge Start	09:33	Pump Intake (ft-bmp)	18.1	Purge Method	Low-Flow
Purge Equipment	Peristaltic				
Purge End	10:11	Volumes Purged		Sample ID	Unknown-01_GW-032322
Sampled by	Gary Schafer				
Sample Time	10:06	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
09:35	0	0	120	18.10	--	6.67	1.56	0.02	3.47	11.6	246.5	--	--
09:40	5	5	120	18.10	--	6.81	1.52	0.54	3.14	11.6	235.3	--	--
09:45	5	10	120	18.10	--	6.86	1.51	0.02	2.97	11.7	228.8	--	--
09:50	5	15	120	18.10	--	6.9	1.5	0.02	2.84	11.8	223.9	--	--
09:55	5	20	120	18.10	--	6.93	1.49	0.02	3.34	11.8	215.4	--	--
10:00	5	25	120	18.10	--	6.94	1.47	0.02	3.34	11.7	214.9	--	--
10:05	5	30	120	18.10	--	6.95	1.48	0.02	3.21	11.9	211.9	Clear	None

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: Unknown-01	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	30112891	Well ID	MW-13-22	Date	03/23/2022
Project Name/Location	RACER PNC		Weather(°F)	38 °F, Light Rain, E winds at 15 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.52	Total Depth (ft-bmp)	26.72	Water Column (ft)	5.2
Purge Start	10:50	Pump Intake (ft-bmp)	25.5	Purge Method	Low-Flow
Purge End	11:45	Volumes Purged	2.38	Sample ID	MW-13-22_GW-032222
Sample Time	11:40	Gallons Purged	2.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.84
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
10:55	0	0	150	21.52	--	6.8	0.628	18.9	1.21	10.5	67.5	--	--
11:00	5	5	150	21.52	--	6.87	0.627	15.1	0.36	11.8	-1.8	--	--
11:05	5	10	150	21.52	--	6.86	0.633	19.7	0.34	11.4	-8.3	--	--
11:10	5	15	150	21.52	--	6.86	0.625	4.2	0.27	11.2	-24.4	--	--
11:15	5	20	150	21.52	--	6.82	0.624	2.3	0.22	11.5	-43	--	--
11:20	5	25	150	21.52	--	6.83	0.625	1.2	0.24	11.4	-56.8	--	--
11:25	5	30	150	21.52	--	6.83	0.625	0.38	0.25	11.4	-61.8	--	--
11:30	5	35	150	21.52	--	6.83	0.625	0.25	0.25	11.3	-68.1	--	--
11:35	5	40	150	21.52	--	6.82	0.623	0.02	0.25	11.2	-71.5	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: Well vault full of water over J-plug. Removed water and J plug was tight no surface water into riser

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: On-site by fence	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	30112891	Well ID	MW-14-22	Date	03/23/2022		
Project Name/Location	RACER PNC	Weather(°F)	39.9 degrees F and Cloudy.				
Measuring Pt. Description	Top of Inner Casing	MP Elevation	Casing Diameter (in)	2	Well Casing Material	PVC	
Static Water Level (ft-bmp)	21.90	Total Depth (ft-bmp)	34.67	Water Column (ft)	12.77	Gallons in Well	2.08
Purge Start	12:10	Pump Intake (ft-bmp)	33	Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	13:00	Volumes Purged	1.20	Sample ID	MW-14-22	Sampled by	Christina Weaver
Sample Time	12:55	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
12:15	0	0	200	21.90	--	7.38	0.453	41	0.82	12.6	-35	--	--
12:20	5	5	200	21.90	--	7.43	0.459	24.7	0.54	12.4	-44.4	--	--
12:25	5	10	200	21.90	--	7.4	0.463	18.3	0.46	12.4	-56.5	--	--
12:30	5	15	200	21.90	--	7.4	0.465	16.5	0.36	12	-57.9	--	--
12:35	5	20	200	21.90	--	7.37	0.458	14.2	0.32	12.1	-60.3	--	--
12:40	5	25	200	21.90	--	7.36	0.459	11.2	0.24	12.2	-60.7	--	--
12:45	5	30	200	21.90	--	7.36	0.459	10.9	0.23	12.2	-62.8	--	--
12:50	5	35	200	21.90	--	7.36	0.457	10.3	0.25	12.2	-62.8	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: Vault full of water pumped out. J plug on tight no surface infiltration into casing

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: On-site by fence	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	30112891	Well ID	MWF16-15	Date	03/23/2022
Project Name/Location	RACER PNC		Weather(°F)	37.9 degrees F and Light Drizzle. The wind is blowing E at 21.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.38	Total Depth (ft-bmp)	35.47	Water Column (ft)	14.09
Purge Start	09:42	Pump Intake (ft-bmp)	34.5	Purge Method	Low-Flow
Purge End	10:20	Volumes Purged	0.87	Sample ID	MWF16-15_GW-032222
Sample Time	10:15	Gallons Purged	2.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	2.29
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
09:42	0	0	150	21.38	--	7.14	0.78	14.9	2.9	11.4	138	--	--
09:47	5	5	150	21.38	--	7.25	0.644	13.7	3.34	11.8	119.6	--	--
09:52	5	10	150	21.40	--	7.26	0.607	8.97	0.73	11.8	120	--	--
09:57	5	15	150	21.40	--	7.27	0.589	8.75	1.05	11.6	119.6	--	--
10:02	5	20	150	21.40	--	7.25	0.585	7.77	1.09	11.3	121.2	--	--
10:07	5	25	150	21.40	--	7.25	0.585	7.45	1.15	11.4	121.3	--	--
10:12	5	30	150	21.40	--	7.24	0.585	7.34	1.2	11.5	122.2	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: North side of 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: 0235

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	30112891	Well ID	MWF16-16	Date	03/23/2022
Project Name/Location	RACER PNC		Weather(°F)	42.1 degrees F and Cloudy. The wind is blowing E at 16.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.91	Total Depth (ft-bmp)	31.3	Water Column (ft)	9.39
Purge Start	14:58	Pump Intake (ft-bmp)	30	Purge Method	Low-Flow
Purge End	15:45	Volumes Purged	0.98	Sample ID	MWF16-16_GW-032322
Sample Time	15:40	Gallons Purged	1.50	Replicate/ Code No.	DUP-03_GW-0322322
				Well Casing Material	PVC
				Gallons in Well	1.53
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
15:02	0	0	200	21.91	--	7.44	0.5	22.3	0.82	12.8	-2.4	--	--
15:07	5	5	200	21.91	--	7.43	0.477	12.9	1.2	12.9	-4.6	--	--
15:12	5	10	200	21.91	--	7.44	0.475	10.8	1.07	12.9	-4.8	--	--
15:17	5	15	200	21.91	--	7.43	0.479	6.55	0.99	13	-4.2	--	--
15:22	5	20	200	21.91	--	7.43	0.479	4.15	1.07	12.9	-4	--	--
15:27	5	25	200	21.91	--	7.42	0.477	3.86	1	13	-3.8	--	--
15:32	5	30	200	21.91	--	7.42	0.477	3.92	0.93	13	-3.5	--	--
15:37	5	35	200	21.91	--	7.42	0.478	3.85	0.94	13	-3.2	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: On-site in brick	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: 0235

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	30112891	Well ID	MWF16-22	Date	03/23/2022
Project Name/Location	RACER PNC		Weather(°F)	39.9 degrees F and Cloudy.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.78	Total Depth (ft-bmp)	33.95	Water Column (ft)	11.17
Purge Start	14:08	Pump Intake (ft-bmp)	33	Purge Method	Low-Flow
Purge End	14:50	Volumes Purged	0.82	Sample ID	MWF16-22_GW-032222
Sample Time	14:45	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.82
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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	200	22.78	--	7.44	0.453	10.8	2.18	12.6	-27.5	--	--
14:16	5	5	200	22.78	--	7.45	0.459	10.6	1.8	12.8	-29.6	--	--
14:21	5	10	200	22.78	--	7.45	0.459	9.87	2.11	13	-32.3	--	--
14:26	5	15	200	22.78	--	7.44	0.459	7.53	2.19	13	-30.7	--	--
14:31	5	20	200	22.78	--	7.41	0.458	4.08	2.15	13.1	-28.3	--	--
14:36	5	25	200	22.78	--	7.4	0.459	3.9	2	13.1	-26.3	--	--
14:41	5	30	200	22.78	--	7.4	0.46	4.1	1.96	13.2	-26.2	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: On-site in brick	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: 0235

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	30112891	Well ID	MW-06-20	Date	03/24/2022
Project Name/Location	RACER PNC		Weather(°F)	45.0 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)	25.51	Total Depth (ft-bmp)	29.25	Water Column (ft)	3.74
Purge Start	08:48	Pump Intake (ft-bmp)	28	Purge Method	Low-Flow
Purge End	09:30	Volumes Purged	1.64	Sample ID	MW-06-20_GW-032422
Sample Time	09:25	Gallons Purged	1.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.61
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
08:50	0	0	200	25.51	--	7.31	0.87	1.17	3.5	12.2	116.5	--	--
08:55	5	5	200	25.51	--	7.27	0.8	2.69	3.05	11.9	105.5	--	--
09:00	5	10	200	25.51	--	7.27	0.8	1.32	2.84	12.4	100.9	--	--
09:05	5	15	200	25.51	--	7.28	0.79	1.43	2.74	12.6	101.5	--	--
09:10	5	20	200	25.51	--	7.3	0.8	0.02	2.85	12.7	101.2	--	--
09:15	5	25	200	25.51	--	7.3	0.8	0.02	2.82	12.8	101.8	--	--
09:20	5	30	200	25.51	--	7.3	0.8	0.02	2.72	12.9	101.3	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: On-site outside of gate	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: 0235

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	30112891	Well ID	MW-11-22	Date	03/24/2022
Project Name/Location	RACER PNC		Weather(°F)	44.1 degrees F and Cloudy. The wind is blowing SW at 12.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	27.05	Total Depth (ft-bmp)	34.7	Water Column (ft)	7.65
Purge Start	11:38	Pump Intake (ft-bmp)	33	Purge Method	Low-Flow
Purge End	12:20	Volumes Purged	1.21	Sample ID	MW-11-22
Sample Time	12:15	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.24
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
11:38	0	0	200	27.05	--	7.27	0.483	23.4	5.27	12.3	93.8	--	--
11:43	5	5	200	27.05	--	7.32	0.502	18.5	5.44	11.3	93.4	--	--
11:48	5	10	200	27.05	--	7.3	0.499	16.8	4.92	12.1	95.5	--	--
11:53	5	15	200	27.05	--	7.32	0.504	14.7	4.84	12.2	96.2	--	--
11:58	5	20	200	27.05	--	7.32	0.503	12.5	4.8	12.4	96.4	--	--
12:03	5	25	200	27.05	--	7.33	0.504	9.58	4.78	12.7	96.5	--	--
12:08	5	30	200	27.05	--	7.33	0.503	9.24	4.77	12.6	97.7	--	--
12:13	5	35	200	27.05	--	7.33	0.504	8.95	4.75	12.7	98.3	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: On-site outside of fence	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	30112891	Well ID	MWF16-23	Date	03/24/2022
Project Name/Location	RACER PNC		Weather(°F)	45.0 degrees F and 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)	23.46	Total Depth (ft-bmp)	30.5	Water Column (ft)	7.04
Purge Start	09:43	Pump Intake (ft-bmp)	29	Purge Method	Low-Flow
Purge End	10:35	Volumes Purged	1.05	Sample ID	MWF16-23_GW-032422
Sample Time	10:30	Gallons Purged	1.20	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.14
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
09:45	0	0	200	23.46	--	7.35	0.473	98	0.97	12.9	80.8	--	--
09:50	5	5	200	23.46	--	7.29	0.465	21.7	0.44	12.9	76.1	--	--
09:55	5	10	200	23.46	--	7.29	0.459	12.3	0.38	12.7	74	--	--
10:00	5	15	200	23.46	--	7.28	0.455	13.2	0.48	12.6	73.4	--	--
10:05	5	20	200	23.46	--	7.23	0.445	12.8	0.436	12.7	71.4	--	--
10:10	5	25	200	23.46	--	7.23	0.438	12.5	1.98	12.7	71.5	--	--
10:15	5	30	200	23.46	--	7.23	0.44	6.51	1.88	12.7	71.9	--	--
10:20	5	35	200	23.46	--	7.22	0.444	5.75	1.86	12.7	72.7	--	--
10:25	5	40	200	23.46	--	7.21	0.451	5.67	1.98	12.6	73.1	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: On-site outside of fence	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: 0235

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	30112891	Well ID	MWF16-24	Date	03/24/2022
Project Name/Location	RACER PNC		Weather(°F)	46.0 degrees F and Cloudy. The wind is blowing SW at 16.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.56	Total Depth (ft-bmp)	29.95	Water Column (ft)	7.39
Purge Start	12:52	Pump Intake (ft-bmp)	28.5	Purge Method	Low-Flow
Purge End	13:50	Volumes Purged	1.25	Sample ID	MWF16-24_GW-032422
Sample Time	13:40	Gallons Purged	1.50	Replicate/ Code No.	MWF16-24_GW-032422; MWF16-24-MS_GW-032422; MWF16-24-MSD_GW-032422
				Sampled by	Christina Weaver
				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
12:54	0	0	230	22.56	--	7.45	0.362	10.8	6.52	13.3	96	--	--
12:59	5	5	230	22.56	--	7.44	0.364	16.9	5.92	13.2	93.9	--	--
13:04	5	10	230	22.56	--	7.44	0.365	12.8	5.82	13.4	95.2	--	--
13:09	5	15	230	22.56	--	7.44	0.366	11.5	5.73	13.2	95.3	--	--
13:14	5	20	230	22.56	--	7.43	0.366	9.48	5.52	13.3	97.2	--	--
13:19	5	25	230	22.56	--	7.43	0.367	8.95	5.44	13.1	97.6	--	--
13:24	5	30	230	22.56	--	7.42	0.367	6.08	6	13.4	98.6	--	--
13:29	5	35	230	22.56	--	7.42	0.369	5.43	5.8	13.2	99.5	--	--
13:34	5	40	230	22.56	--	7.43	0.369	5.85	5.83	13.2	100	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: On-site near dumpster parking

Well Locked at Arrival: yes

Condition of Well: Good condition

Well Locked at Departure: yes

Well Completion: Flush mount

Key Number To Well: 0235

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	30112891	Well ID	MWF16-25	Date	03/24/2022
Project Name/Location	RACER PNC		Weather(°F)	45.0 degrees F and 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)	25.51	Total Depth (ft-bmp)	36.75	Water Column (ft)	11.24
Purge Start	10:48	Pump Intake (ft-bmp)	35.5	Purge Method	Low-Flow
Purge End	11:30	Volumes Purged	0.82	Sample ID	MWF16-25_GW-032422
Sample Time	11:25	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.83
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
10:50	0	0	200	25.51	--	7.15	0.578	17.4	3.43	11.9	85.2	--	--
10:55	5	5	200	25.51	--	7.23	0.581	9.8	4.47	11.9	82.5	--	--
11:00	5	10	200	25.51	--	7.24	0.583	3.5	4.92	12	81.3	--	--
11:05	5	15	200	25.51	--	7.23	0.581	3.92	3.38	11.9	82.2	--	--
11:10	5	20	200	25.51	--	7.23	0.581	1.17	3.63	12	82.8	--	--
11:15	5	25	200	25.51	--	7.24	0.582	1.25	3.65	12	82.9	--	--
11:20	5	30	200	25.51	--	7.24	0.582	1.57	3.74	12.1	83.2	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: On-site outside of fence by tree	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: 0235

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	30112891	Well ID	TW-12-22	Date	03/24/2022
Project Name/Location	RACER PNC		Weather(°F)	46.0 degrees F and Cloudy.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	1
Static Water Level (ft-bmp)	22.32	Total Depth (ft-bmp)	32.7	Water Column (ft)	10.38
Purge Start	14:32	Pump Intake (ft-bmp)	31.5	Purge Method	Low-Flow
Purge End	15:25	Volumes Purged	2.38	Sample ID	TW-12-22_GW-032422
Sample Time	15:20	Gallons Purged	1.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.42
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
14:34	0	0	200	22.32	--	7.47	0.439	88.2	0.83	13.2	103.5	--	--
14:39	5	5	200	22.32	--	7.54	0.44	42.3	0.52	13.1	92.5	--	--
14:44	5	10	200	22.32	--	7.53	0.438	32.3	0.69	13.2	85.3	--	--
14:49	5	15	200	22.32	--	7.53	0.438	19.6	0.83	13.2	80	--	--
14:54	5	20	200	22.32	--	7.52	0.438	7.28	0.87	13.2	72.5	--	--
14:59	5	25	200	22.32	--	7.51	0.438	3.5	0.91	12.9	67.8	--	--
15:04	5	30	200	22.32	--	7.51	0.437	2.65	0.94	13.1	67.2	--	--
15:09	5	35	200	22.32	--	7.5	0.437	1.93	0.99	13.1	64.3	--	--
15:14	5	40	200	22.32	--	7.5	0.437	2.28	1	12.9	63.8	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: On-site	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	30075936	Well ID	MW-09-22	Date	03/24/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	46.0 degrees F and Cloudy.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	20.48	Total Depth (ft-bmp)	32.87	Water Column (ft)	12.39
Purge Start	15:08	Pump Intake (ft-bmp)	20.48	Purge Method	Low-Flow
Purge End	15:55	Volumes Purged	0.75	Sample ID	MW-09-22_GW-032422
Sample Time	15:51	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	2.01
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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	120	20.48	--	7.41	0.596	32.1	2.81	11.7	183.5	--	--
15:15	5	5	120	20.48	--	7.27	0.595	31.7	1.18	11.7	188.3	--	--
15:20	5	10	120	20.48	--	7.23	0.597	24.1	0.83	11.6	188.9	--	--
15:25	5	15	120	20.48	--	7.28	0.6	17.4	0.81	11.6	185.9	--	--
15:30	5	20	120	20.48	--	7.28	0.6	12.7	0.88	11.6	185	--	--
15:35	5	25	120	20.48	--	7.29	0.603	10.7	0.86	11.6	184.3	--	--
15:40	5	30	120	20.48	--	7.32	0.603	9.27	0.89	11.8	183	--	--
15:45	5	35	120	20.48	--	7.33	0.604	8.7	0.9	11.7	182.4	--	--
15:50	5	40	120	20.48	--	7.31	0.604	8	0.89	11.6	182.7	Clear	None

Constituent Sampled	Container	Number	Preservative
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: MW-09-22 Fiero 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	30075936	Well ID	MWF16-05	Date	03/24/2022		
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	45.0 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	Well Casing Material	PVC
Static Water Level (ft-bmp)	19.82	Total Depth (ft-bmp)	22.7	Water Column (ft)	2.88	Gallons in Well	0.47
Purge Start	09:02	Pump Intake (ft-bmp)	19.85	Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	10:49	Volumes Purged	5.32	Sample ID	MWF16-05_GW-032422	Sampled by	Gary Schafer
Sample Time	10:36	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
09:05	0	0	100	19.85	--	7.53	0.467	369	8.4	10.2	274	--	--
09:10	5	5	100	19.85	--	7.77	0.462	409	8.16	10.4	258.2	--	--
09:15	5	10	100	19.85	--	8.76	0.46	470	7.58	10.5	235.5	--	--
09:20	5	15	100	19.85	--	7.97	0.57	387	5.14	10.3	244.9	--	--
09:25	5	20	100	19.85	--	7.87	0.58	328	4.86	10.5	241.4	--	--
09:30	5	25	100	19.85	--	7.86	0.587	264	4.66	10.5	237.9	--	--
09:35	5	30	100	19.85	--	7.79	0.591	227	4.66	10.5	235.3	--	--
09:40	5	35	100	19.85	--	7.89	0.57	210	5.29	10.5	230.8	--	--
09:45	5	40	100	19.85	--	7.89	0.56	185	5.13	10.4	228.8	--	--
09:50	5	45	100	19.85	--	7.82	0.575	166	4.86	10.5	230.7	--	--
09:55	5	50	100	19.85	--	7.74	0.583	136	4.72	10.3	229.8	--	--
10:00	5	55	100	19.85	--	7.65	0.6	102	4.22	10.4	231.8	--	--
10:05	5	60	100	19.85	--	7.62	0.607	74.2	3.87	10.3	230.5	--	--
10:10	5	65	100	19.85	--	7.59	0.611	58	3.63	10.3	228.7	--	--
10:15	5	70	100	19.85	--	7.61	0.606	55	3.45	10.3	230.1	--	--
10:20	5	75	100	19.85	--	7.63	0.611	52.8	3.66	10	228.9	--	--
10:25	5	80	100	19.85	--	7.64	0.613	50.7	3.53	10.1	227	--	--
10:30	5	85	100	19.85	--	7.64	0.616	51.1	3.32	10.1	228.1	--	--
10:35	5	90	100	19.85	--	7.62	0.618	50.1	3.23	10	228	Slight turbid	None

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

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 Location: MWF16-05

Well Locked at Arrival: yes

Condition of Well: Missing bolts, Vault cover broken

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	30075936	Well ID	MWF16-12	Date	03/24/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	44.1 degrees F and Cloudy. The wind is blowing SW at 12.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	12.68	Total Depth (ft-bmp)	18.94	Water Column (ft)	6.26
Purge Start	12:53	Pump Intake (ft-bmp)	12.92	Purge Method	Low-Flow
Purge End	13:44	Volumes Purged	1.47	Sample ID	MWF16-12_GW-032422
Sample Time	13:36	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.02
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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	120	12.94	--	7.58	0.401	19.3	8.27	8.8	217.2	--	--
13:00	5	5	120	12.92	--	7.57	0.421	22.4	7.35	9	217	--	--
13:05	5	10	120	12.92	--	7.25	0.476	6.8	4.48	9.3	212.3	--	--
13:10	5	15	120	12.92	--	7.28	0.483	3.25	4.42	9.2	206.5	--	--
13:15	5	20	120	12.92	--	7.29	0.498	4.11	3.7	9.3	203.5	--	--
13:20	5	25	120	12.92	--	7.32	0.488	2.15	4.14	9.3	198.9	--	--
13:25	5	30	120	12.92	--	7.35	0.492	3.45	4.06	9.2	198.3	--	--
13:30	5	35	120	12.92	--	7.35	0.492	3.77	4	9.3	195.4	--	--
13:35	5	40	120	12.92	--	7.38	0.487	4.82	4.08	9.2	192.2	Clear	None

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: MWF16-12	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	30075936	Well ID	MWF16-17	Date	03/24/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	45.0 degrees F and 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)	19.38	Total Depth (ft-bmp)	31.7	Water Column (ft)	12.32
Purge Start	11:18	Pump Intake (ft-bmp)	19.38	Purge Method	Low-Flow
Purge End	12:12	Volumes Purged	0.75	Sample ID	MWF16-17_GW-032422
Sample Time	12:01	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	2
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
11:20	0	0	100	19.38	--	7.05	1.46	16.2	1.28	11	228	--	--
11:25	5	5	100	19.38	--	7.06	1.47	10	1.02	11	225.3	--	--
11:30	5	10	100	19.38	--	7.03	1.47	9.42	1.03	11.1	224.6	--	--
11:35	5	15	100	19.38	--	7.03	1.46	9.03	0.99	11.1	221.9	--	--
11:40	5	20	100	19.38	--	7.02	1.47	8.42	0.94	11.2	220.2	--	--
11:45	5	25	100	19.38	--	7.02	1.47	8.04	0.91	11.1	217.6	--	--
11:50	5	30	100	19.38	--	7.02	1.47	6.27	0.84	11.3	213.1	--	--
11:55	5	35	100	19.38	--	7.03	1.47	6.15	0.83	11.3	212.4	--	--
12:00	5	40	100	19.38	--	7.03	1.47	5.7	0.85	11.5	209.6	Clear	None

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: MWF16-17	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	30075936	Well ID	MWF16-18	Date	03/24/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	46.0 degrees F and Cloudy. The wind is blowing SW at 16.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	20.30	Total Depth (ft-bmp)	31.95	Water Column (ft)	11.65
Purge Start	14:13	Pump Intake (ft-bmp)	20.3	Purge Method	Low-Flow
Purge End	14:54	Volumes Purged	0.79	Sample ID	MWF16-18_GW-032422
Sample Time	14:46	Gallons Purged	1.50	Replicate/ Code No.	DUP-04_GW-032422
				Well Casing Material	PVC
				Gallons in Well	1.89
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
14:15	0	0	120	20.30	--	6.92	0.86	2.08	1.36	10.7	219.9	--	--
14:20	5	5	120	20.30	--	6.84	0.87	0.73	0.93	10.6	211.6	--	--
14:25	5	10	120	20.30	--	6.9	0.86	1.17	0.9	10.6	199.9	--	--
14:30	5	15	120	20.30	--	6.97	0.86	0.38	0.81	10.6	186.5	--	--
14:35	5	20	120	20.30	--	7.02	0.86	0.1	0.79	10.6	177.1	--	--
14:40	5	25	120	20.30	--	7.02	0.86	0.02	0.78	10.6	175.6	--	--
14:45	5	30	120	20.30	--	7.03	0.86	0.29	0.79	10.6	169.8	Clear	None

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: MWF16-18	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	30075936	Well ID	MWOS-08	Date	03/25/2022
Project Name/Location	RACER Pontiac North Campus 2021		Weather(°F)	35.1 degrees F and Cloudy. The wind is blowing W at 10.3 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	25.53	Total Depth (ft-bmp)	28.8	Water Column (ft)	3.27
Purge Start	08:58	Pump Intake (ft-bmp)	25.53	Purge Method	Low-Flow
Purge End	09:42	Volumes Purged	1.89	Sample ID	MWOS-08_GW-032522
Sample Time	09:36	Gallons Purged	1.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.53
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
09:00	0	0	120	25.53	--	7.31	0.78	1.58	4.56	9.8	217.1	--	--
09:05	5	5	120	25.53	--	7.27	0.77	0.09	3.98	10.5	217	--	--
09:10	5	10	120	25.53	--	7.27	0.77	0.54	3.81	10.4	213.8	--	--
09:15	5	15	120	25.53	--	7.25	0.77	0.97	3.87	10.3	209.8	--	--
09:20	5	20	120	25.53	--	7.24	0.77	0.66	3.86	10.3	208.6	--	--
09:25	5	25	120	25.53	--	7.24	0.77	0.6	3.66	10.6	205	--	--
09:30	5	30	120	25.53	--	7.24	0.76	0.49	3.58	10.7	203.4	--	--
09:35	5	35	120	25.53	--	7.24	0.76	0.29	3.6	10.6	202.3	Clear	None

Constituent Sampled	Container	Number	Preservative

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: Corner of St.Clair and Kenneth	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	30112891	Well ID	MW-02-17	Date	05/31/2022		
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	84.0 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	Well Casing Material	PVC
Static Water Level (ft-bmp)	25.40	Total Depth (ft-bmp)	29.74	Water Column (ft)	4.34	Gallons in Well	0.71
Purge Start	12:47	Pump Intake (ft-bmp)		Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	13:41	Volumes Purged	2.11	Sample ID	MW-02-17-GW_053122	Sampled by	Gary Schafer
Sample Time	13:36	Gallons Purged	1.50	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
12:50	0	0	125	25.41	--	7.04	1.07	28.9	0.3	15.9	-78.7	--	--
12:55	5	5	125	25.42	--	7.1	1.06	24.9	0.26	15.7	-97.3	--	--
13:00	5	10	125	25.42	--	7.13	1.05	19.3	0.28	15.6	-109.8	--	--
13:05	5	15	125	25.42	--	7.15	1.05	18.9	0.25	15.6	-121.6	--	--
13:10	5	20	125	25.42	--	7.15	1.04	18.1	0.27	15.6	-124.1	--	--
13:15	5	25	125	25.42	--	7.16	1.04	12.8	0.28	15.6	-129.1	--	--
13:20	5	30	125	25.42	--	7.15	1.03	14.8	0.27	15.5	-130.1	--	--
13:25	5	35	125	25.42	--	7.16	1.04	12	0.28	15.5	-133.8	--	--
13:30	5	40	125	25.42	--	7.16	1.04	11	0.29	15.6	-134.8	--	--
13:35	5	45	125	25.42	--	7.16	1.03	9	0.29	15.6	-137	Clear	None

Constituent Sampled	Container	Number	Preservative

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: Feiro area south end	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	30112891	Well ID	MW-05-18	Date	05/31/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	82.9 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)	26.70	Total Depth (ft-bmp)	33.58	Water Column (ft)	6.88
Purge Start	14:03	Pump Intake (ft-bmp)		Purge Method	Low-Flow
Purge End	14:53	Volumes Purged	1.34	Sample ID	MW-05-18-GW_053122
Sample Time	14:46	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.12
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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	125	26.72	--	7.3	0.8	13.7	0.56	16	-6.2	--	--
14:10	5	5	125	26.72	--	7.26	0.8	8.84	0.35	15.7	-33.4	--	--
14:15	5	10	125	26.72	--	7.22	0.79	8.61	0.45	15.4	-79.9	--	--
14:20	5	15	125	26.72	--	7.22	0.77	9.1	0.45	15.4	-96.5	--	--
14:25	5	20	125	26.72	--	7.23	0.76	6.36	0.43	15.4	-99.9	--	--
14:30	5	25	125	26.72	--	7.23	0.76	1.38	0.44	15.3	-106.8	--	--
14:35	5	30	125	26.72	--	7.22	0.76	4.56	0.43	15.3	-108	--	--
14:40	5	35	125	26.72	--	7.24	0.76	1.09	0.43	15.4	-114.3	--	--
14:45	5	40	125	26.72	--	7.24	0.76	0.85	0.43	15.3	-115.2	Clear	None

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: Feiro area west side	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	30112891	Well ID	MW-13-22	Date	06/01/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	75.9 degrees F and Cloudy.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.58	Total Depth (ft-bmp)	26.75	Water Column (ft)	5.17
Purge Start	13:33	Pump Intake (ft-bmp)		Purge Method	Low-Flow
Purge End	14:15	Volumes Purged	1.79	Sample ID	MW-13-22-GW_060122
Sample Time	14:06	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.84
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
13:35	0	0	125	21.58	--	6.65	0.86	3.13	0.5	14.4	-101.1	--	--
13:40	5	5	125	21.68	--	6.71	0.85	0.78	0.4	14.8	-108.6	--	--
13:45	5	10	125	21.68	--	6.74	0.86	0.16	0.4	14.8	-113.6	--	--
13:50	5	15	125	21.68	--	6.75	0.86	0.24	0.38	14.6	-117	--	--
13:55	5	20	125	21.68	--	6.75	0.86	0.65	0.38	14.4	-119.8	--	--
14:00	5	25	125	21.68	--	6.76	0.86	0.12	0.37	14.5	-122.3	--	--
14:05	5	30	125	21.68	--	6.76	0.85	0.93	0.37	14.4	-124.7	Clear	None

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 side of fence	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	30112891	Well ID	MW-14-22	Date	06/01/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	77.0 degrees F and Cloudy. The wind is blowing at 4.7 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)	34.65	Water Column (ft)	12.7
Purge Start	14:38	Pump Intake (ft-bmp)		Purge Method	Low-Flow
Purge End	15:39	Volumes Purged	0.73	Sample ID	MW-14-22-GW_060122
Sample Time	15:21	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	2.06
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
14:40	0	0	125	21.95	--	7.4	0.62	106	1.37	14.7	-24.2	--	--
14:45	5	5	125	21.95	--	7.35	0.63	38.5	1.1	14.9	-73.9	--	--
14:50	5	10	125	21.95	--	7.34	0.63	18.7	0.93	14.6	-79.5	--	--
14:55	5	15	125	21.95	--	7.32	0.63	21.3	0.23	14.6	-80.1	--	--
15:00	5	20	125	21.95	--	7.32	0.62	12	0.2	14.5	-81.7	--	--
15:05	5	25	125	21.95	--	7.32	0.62	9.53	0.21	14.5	-82.9	--	--
15:10	5	30	125	21.95	--	7.32	0.62	7.83	0.2	14.4	-83.9	--	--
15:15	5	35	125	21.95	--	7.33	0.62	6.38	0.2	14.4	-85.2	--	--
15:20	5	40	125	21.95	--	7.32	0.62	6.41	0.19	14.4	-86.1	Clear	None

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 of fence	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	30112891	Well ID	MWF16-05	Date	06/02/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	54.0 degrees F and Light Rain. The wind is blowing undefined at 0.0 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	19.85	Total Depth (ft-bmp)	22.74	Water Column (ft)	2.89
Purge Start	09:03	Pump Intake (ft-bmp)		Purge Method	Low-Flow
Purge End	10:31	Volumes Purged	5.32	Sample ID	MWF16-05-GW_060222
Sample Time	10:21	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.47
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
09:05	0	0	125	19.85	--	7.81	0.83	99.3	9.66	12.6	23.7	--	--
09:10	5	5	125	19.88	--	7.79	0.83	145	9.47	12.6	19.5	--	--
09:15	5	10	125	19.88	--	7.55	0.85	384	9.26	12.6	9.7	--	--
09:20	5	15	125	19.90	--	7.49	0.84	257	8.62	12.5	3.5	--	--
09:25	5	20	125	19.90	--	7.48	0.81	182	8.41	12.5	-1.4	--	--
09:30	5	25	125	19.90	--	7.49	0.8	130	7.74	12.5	-4.2	--	--
09:35	5	30	125	19.90	--	7.5	0.79	85.3	7.6	12.5	-5.3	--	--
09:40	5	35	125	19.90	--	7.49	0.78	76.1	7.51	12.5	-7.2	--	--
09:45	5	40	125	19.90	--	7.49	0.77	61	7.39	12.5	-9.9	--	--
09:50	5	45	125	19.90	--	7.49	0.77	46.5	7.2	12.6	-11.2	--	--
09:55	5	50	125	19.90	--	7.48	0.76	31.8	5.78	12.6	-13.4	--	--
10:00	5	55	125	19.90	--	7.48	0.75	22.8	5.7	12.6	-14.7	--	--
10:05	5	60	125	19.90	--	7.48	0.77	17	5.68	12.6	-15.1	--	--
10:10	5	65	125	19.90	--	7.47	0.74	13.7	3.74	12.6	-9.3	--	--
10:15	5	70	125	19.90	--	7.47	0.73	10.5	2.96	12.6	-17	--	--
10:20	5	75	125	19.90	--	7.47	0.73	7.64	3.5	12.7	-17.6	Clear	None

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: Feiro construction 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	30112891	Well ID	MWF16-16	Date	06/02/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	55.9 degrees F and Light Rain. The wind is blowing W at 3.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.02	Total Depth (ft-bmp)	31.21	Water Column (ft)	9.19
Purge Start	11:13	Pump Intake (ft-bmp)		Purge Method	Low-Flow
Purge End	12:12	Volumes Purged	1.01	Sample ID	MWF16-16-GW_060222
Sample Time	11:46	Gallons Purged	1.50	Replicate/ Code No.	DUP-01-GW_060222
				Well Casing Material	PVC
				Gallons in Well	1.49
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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	125	22.02	--	7.45	0.58	4.56	2.46	14	33.3	--	--
11:20	5	5	125	22.02	--	7.44	0.58	3.77	2.43	13.9	2.5	--	--
11:25	5	10	125	22.02	--	7.44	0.58	3.62	2.55	14	-9.9	--	--
11:30	5	15	125	22.02	--	7.45	0.58	3.59	2.53	13.9	-15.5	--	--
11:35	5	20	125	22.02	--	7.44	0.59	2.02	2.47	14	-18	--	--
11:40	5	25	125	22.02	--	7.45	0.59	1.72	2.43	14	-18.3	--	--
11:45	5	30	125	22.02	--	7.44	0.59	2.1	2.41	14	-17.8	Clear	None

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: Feiro area north of fence	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	30112891	Well ID	MWF16-22	Date	06/01/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	75.0 degrees F and Light Rain. The wind is blowing W/NW at 9.2 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.83	Total Depth (ft-bmp)	33.92	Water Column (ft)	11.09
Purge Start	15:57	Pump Intake (ft-bmp)		Purge Method	Low-Flow
Purge End	16:58	Volumes Purged	0.83	Sample ID	MWF16-22-GW_060122
Sample Time	16:46	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.8
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
16:00	0	0	125	22.83	--	7.4	0.61	13.2	2.57	15.4	20.2	--	--
16:05	5	5	125	22.83	--	7.4	0.61	14	2.4	15.4	-27.9	--	--
16:10	5	10	125	22.83	--	7.39	0.61	9.72	2.5	15.5	-50.2	--	--
16:15	5	15	125	22.83	--	7.39	0.61	8.72	2.14	15.2	-52.9	--	--
16:20	5	20	125	22.83	--	7.38	0.61	5.33	2.3	15.1	-53.8	--	--
16:25	5	25	125	22.83	--	7.38	0.61	4.06	2.83	15.1	-54.3	--	--
16:30	5	30	125	22.83	--	7.39	0.61	5.06	2.79	15.2	-54.2	--	--
16:35	5	35	125	22.83	--	7.39	0.61	2.25	2.79	15.2	-53.5	--	--
16:40	5	40	125	22.83	--	7.4	0.61	2.44	2.81	15.2	-53.4	--	--
16:45	5	45	125	22.83	--	7.39	0.61	2.76	2.8	15.4	-53.1	Clear	None

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: Feiro area south end	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	30112891	Well ID	MWOS-08	Date	06/02/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	60.1 degrees F and Mostly Cloudy. The wind is blowing NW at 6.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	25.49	Total Depth (ft-bmp)	28.82	Water Column (ft)	3.33
Purge Start	12:47	Pump Intake (ft-bmp)		Purge Method	Low-Flow
Purge End	13:39	Volumes Purged	2.78	Sample ID	MWOS-08-GW_060222
Sample Time	13:31	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.54
				Purge Equipment	Peristaltic
				Sampled by	Gary Schafer
				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
12:50	0	0	125	25.49	--	7.21	0.8	1.29	3.85	14.1	81.5	--	--
12:55	5	5	125	25.50	--	7.18	0.8	1.28	3.59	14.1	77.9	--	--
13:00	5	10	125	25.50	--	7.21	0.79	0.26	3.42	14.3	72.9	--	--
13:05	5	15	125	25.50	--	7.18	0.79	0.65	3.67	14.3	72.8	--	--
13:10	5	20	125	25.50	--	7.2	0.78	0.81	3.34	14.2	68.2	--	--
13:15	5	25	125	25.50	--	7.17	0.79	0.41	3.58	14.3	69.4	--	--
13:20	5	30	125	25.50	--	7.19	0.78	0.12	3.17	14.3	65.7	--	--
13:25	5	35	125	25.50	--	7.17	0.78	0.02	3.2	14.3	66.2	--	--
13:30	5	40	125	25.50	--	7.18	0.78	0.02	3.19	14.3	62.8	Clear	None

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: <u>Corner of St.Clair and Kennett streets</u>	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Flush mount</u>	Key Number To Well: <u>NA</u>

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	30112891	Well ID	MWOS-10	Date	06/02/2022		
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	70.0 degrees F and Partly Cloudy. The wind is blowing W/NW at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2	Well Casing Material	PVC
Static Water Level (ft-bmp)	27.94	Total Depth (ft-bmp)	32.78	Water Column (ft)	4.84	Gallons in Well	0.79
Purge Start	14:23	Pump Intake (ft-bmp)		Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	16:28	Volumes Purged	3.16	Sample ID	MWOS-10-GW_060222	Sampled by	Gary Schafer
Sample Time	16:16	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
14:25	0	0	125	27.94	--	7.27	0.89	71.6	1.12	15.5	65.1	--	--
14:30	5	5	125	27.94	--	7.26	0.89	107	1.35	15.4	40.1	--	--
14:35	5	10	125	27.95	--	7.26	0.9	74.6	1.53	15.6	22.4	--	--
14:40	5	15	125	27.95	--	7.28	0.91	49.4	1.89	15.8	16.7	--	--
14:45	5	20	125	27.95	--	7.27	0.91	38.1	1.9	15.5	14.6	--	--
14:50	5	25	125	27.95	--	7.26	0.91	36	2.17	15.7	15.7	--	--
14:55	5	30	125	27.95	--	7.25	0.9	34.7	2.14	15.7	13.3	--	--
15:00	5	35	125	27.95	--	7.27	0.9	30.2	2.13	15.6	12.4	--	--
15:05	5	40	125	27.95	--	7.25	0.9	33.2	2.07	15.8	7.8	--	--
15:10	5	45	125	27.95	--	7.26	0.9	30	2.06	15.8	8	--	--
15:15	5	50	125	27.95	--	7.25	0.9	20.1	2.03	15.7	8.7	--	--
15:20	5	55	125	27.95	--	7.26	0.9	18.9	2.03	15.6	13.7	--	--
15:25	5	60	125	27.95	--	7.26	0.9	17.2	2.03	15.6	90	--	--
15:30	5	65	125	27.95	--	7.25	0.9	16.7	2.01	15.7	52.5	--	--
15:35	5	70	125	27.95	--	7.25	0.9	17.8	1.99	15.5	37.9	--	--
15:40	5	75	125	27.95	--	7.25	0.9	20.9	1.9	15.4	29.7	--	--
15:45	5	80	125	27.95	--	7.25	0.9	20.8	1.88	15.5	32.5	--	--
15:50	5	85	125	27.95	--	7.25	0.9	19.2	1.87	15.5	38.1	--	--
15:55	5	90	125	27.95	--	7.24	0.9	17.2	1.86	15.7	50.4	--	--
16:00	5	95	125	27.95	--	7.24	0.9	15.2	1.84	15.6	57.8	--	--
16:05	5	100	125	27.95	--	7.25	0.9	15.4	1.83	15.6	63.5	--	--
16:10	5	105	125	27.95	--	7.25	0.9	13.4	1.83	15.8	66.5	--	--
16:15	5	110	125	27.95	--	7.24	0.9	13	1.81	15.7	65.9	Clear	None

Comments:

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 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:	On burned out house	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	30112891	Well ID	MW-06-20	Date	05/31/2022
Project Name/Location	RACER PNC		Weather(°F)	82.9 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)	25.46	Total Depth (ft-bmp)	29.24	Water Column (ft)	3.78
Purge Start	13:43	Pump Intake (ft-bmp)	27	Purge Method	Low-Flow
Purge End		Volumes Purged	3.77	Sample ID	MW-06-20_GW-053122
Sample Time	14:35	Gallons Purged	2.30	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.61
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
13:47	0	0	150	25.48	--	7.31	0.92	12.5	2.01	17.2	45.4	--	--
13:52	5	5	150	25.48	--	7.27	0.92	7.36	1.97	17.4	36.1	--	--
13:57	5	10	150	25.48	--	7.27	0.92	3.68	1.99	17.4	31.8	--	--
14:02	5	15	150	25.48	--	7.27	0.92	1.41	1.98	17	20	--	--
14:07	5	20	150	25.48	--	7.26	0.92	1.25	2.01	17.4	18.6	--	--
14:12	5	25	150	25.48	--	7.27	0.93	0.02	2.04	16.8	12.6	--	--
14:17	5	30	150	25.48	--	7.25	0.93	0.02	1.98	16.7	3.2	--	--
14:22	5	35	150	25.48	--	7.24	0.93	0.02	1.96	17.2	0.6	--	--
14:27	5	40	150	25.48	--	7.24	0.93	0.02	2	17.3	-4.9	--	--
14:32	5	45	150	25.48	--	7.25	0.93	0.02	2.1	16.9	-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: Outside of gate 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: 2035

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	30112891	Well ID	MW-07-20	Date	05/31/2022		
Project Name/Location	RACER PNC		Weather(°F)	84.0 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	Well Casing Material	PVC
Static Water Level (ft-bmp)	26.12	Total Depth (ft-bmp)	30.18	Water Column (ft)	4.06	Gallons in Well	0.66
Purge Start	12:36	Pump Intake (ft-bmp)	28.5	Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	13:15	Volumes Purged	1.82	Sample ID	MW-07-20_GW-053122	Sampled by	Christina Weaver
Sample Time	13:10	Gallons Purged	1.20	Replicate/ Code No.	MW-07-20_GW-053122_MS, MW-07-20_GW-053122_MSD	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
12:39	0	0	150	26.12	--	7.47	0.85	3.02	3.04	15.1	85.7	--	--
12:44	5	5	150	26.13	--	7.2	0.79	1.25	3.77	14.8	94.4	--	--
12:49	5	10	150	26.13	--	7.22	0.77	0.02	3.7	14.7	84.1	--	--
12:54	5	15	150	26.13	--	7.32	0.77	0.02	4.13	14.8	67.7	--	--
12:59	5	20	150	26.13	--	7.37	0.76	0.02	4.29	14.9	55	--	--
13:04	5	25	150	26.13	--	7.38	0.76	0.02	4.3	15.1	53	--	--
13:09	5	30	150	26.13	--	7.4	0.76	0.02	4.2	15.1	45.6	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: 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: 2035

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	30112891	Well ID	MW-08-21	Date	06/01/2022
Project Name/Location	RACER PNC		Weather(°F)	78.1 degrees F and Cloudy. The wind is blowing W at 13.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.25	Total Depth (ft-bmp)	30.27	Water Column (ft)	4.02
Purge Start	12:43	Pump Intake (ft-bmp)	28.5	Purge Method	Low-Flow
Purge End	13:50	Volumes Purged		Sample ID	MW-08-21_GW-060122
Sample Time	13:35	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.65
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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	250	26.26	--	7.34	1.17		2.13	16.5	140	--	--
12:51	5	5	250	26.26	--	7.23	1.17	9.57	3.39	16.3	136.7	--	--
12:56	5	10	250	26.26	--	7.21	1.16	8.45	3.3	16.4	135.2	--	--
13:01	5	15	250	26.26	--	7.16	1.16	20.5	3.23	17	133.8	--	--
13:06	5	20	200	26.26	--	7.19	1.16	8.02	3.26	17	126.2	--	--
13:11	5	25	200	26.26	--	7.21	1.15	6.24	3.34	16.4	121.7	--	--
13:16	5	30	200	26.26	--	7.22	1.15	0.83	3.29	16.3	116.1	--	--
13:21	5	35	200	26.26	--	7.32	1.14	0.02	3.12	16.9	109	--	--
13:26	5	40	200	26.26	--	7.29	1.14	0.02	3.09	17	105.7	--	--
13:31	5	45	200	26.26	--	7.3	1.13	0.02	3.04	17.1	101.7	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL
Dissolved Gases	40 mL Glass	3	HCL
Sulfate	250 mL Plastic	1	None
Dissolved Iron	125 mL Plastic	1	HNO3
Total Iron	125 mL Plastic	1	HNO3
Total Organic Carbon	40 mL Glass	2	H2SO4

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: Outside of security gate

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: 2035

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	30112891	Well ID	MW-09-22	Date	06/02/2022
Project Name/Location	RACER PNC		Weather(°F)	54.0 degrees F and Light Rain. The wind is blowing undefined at 0.0 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	20.46	Total Depth (ft-bmp)	32.85	Water Column (ft)	12.39
Purge Start	10:29	Pump Intake (ft-bmp)	31.5	Purge Method	Low-Flow
Purge End	12:20	Volumes Purged	1.99	Sample ID	MW-09-22_060222
Sample Time	12:05	Gallons Purged	4.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	2.01
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
10:30	0	0	200	20.48	--	7.43	0.586	846	1.28	13.8	16.7	--	--
10:35	5	5	200	20.48	--	7.33	0.582	407	0.96	14	25.8	--	--
10:40	5	10	200	20.48	--	7.28	0.579	211	1.06	13.9	37.3	--	--
10:45	5	15	180	20.48	--	7.3	0.581	182	0.99	13.9	40.5	--	--
10:50	5	20	180	20.48	--	7.31	0.585	182	1.01	13.9	46.4	--	--
10:55	5	25	180	20.48	--	7.35	0.584	75.2	1.21	14.2	47.7	--	--
11:00	5	30	180	20.48	--	7.35	0.583	63.2	1.2	14.4	48.5	--	--
11:05	5	35	180	20.48	--	7.37	0.59	101	0.97	14.6	54.8	--	--
11:10	5	40	180	20.48	--	7.37	0.593	86.5	0.96	14.7	58.9	--	--
11:15	5	45	180	20.48	--	7.37	0.594	73.2	0.84	14.6	60.2	--	--
11:20	5	50	180	20.48	--	7.37	0.594	52.2	0.78	14.6	64.4	--	--
11:25	5	55	180	20.49	--	7.37	0.593	52.1	0.76	14.6	67.2	--	--
11:30	5	60	180	20.48	--	7.37	0.596	41	0.77	14.5	71.2	--	--
11:35	5	65	180	20.48	--	7.37	0.594	29.4	0.84	14.5	80.4	--	--
11:40	5	70	180	20.48	--	7.37	0.593	26.7	0.91	14.6	87.4	--	--
11:45	5	75	180	20.48	--	7.37	0.595	21.6	0.79	14.7	92.1	--	--
11:50	5	80	180	20.48	--	7.36	0.591	12.4	0.99	14.5	102.6	--	--
11:55	5	85	180	20.48	--	7.36	0.591	12.3	0.98	14.4	108.8	--	--
12:00	5	90	180	20.48	--	7.37	0.597	12	0.99	14.5	111.5	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL
Dissolved gasses	40 mL Glass	3	HCL
Total Organic Carbon	40 mL Glass	2	H2SO4
Sulfate	250 mL Plastic	1	None

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



Total Iron	125 mL Plastic	1	HNO3
Dissolved Iron	250 mL Plastic	1	HNO3

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: Onsite Fiero North	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	30112891	Well ID	MWF16-23	Date	06/01/2022
Project Name/Location	RACER PNC		Weather(°F)	75.9 degrees F and Cloudy.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	23.42	Total Depth (ft-bmp)	30.48	Water Column (ft)	7.06
Purge Start	14:09	Pump Intake (ft-bmp)	29	Purge Method	Low-Flow
Purge End	15:20	Volumes Purged	2.61	Sample ID	MWF16-23_GW-060122
Sample Time	15:10	Gallons Purged	3.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.15
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
14:12	0	0	200	23.44	--	7.31	0.546	37.7	1.11	15.9	71.4	--	--
14:17	5	5	200	23.44	--	7.24	0.544	27	0.87	15.8	72.2	--	--
14:22	5	10	200	23.44	--	7.2	0.545	28.3	0.85	15.9	71.7	--	--
14:27	5	15	200	23.45	--	7.26	0.558	22.1	0.69	16.1	63.6	--	--
14:32	5	20	200	23.45	--	7.26	0.563	15.7	0.63	15.9	62.3	--	--
14:37	5	25	200	23.45	--	7.28	0.57	14.7	0.44	15.9	56.7	--	--
14:42	5	30	200	23.45	--	7.28	0.571	9.46	0.44	16.1	55.1	--	--
14:47	5	35	200	23.45	--	7.28	0.573	10.3	0.42	16	54	--	--
14:52	5	40	200	23.45	--	7.28	0.576	7.33	0.41	16	52.2	--	--
14:57	5	45	200	23.45	--	7.28	0.58	4.28	0.32	16	49.8	--	--
15:02	5	50	200	23.45	--	7.28	0.582	4.15	0.35	16.1	47.3	--	--
15:07	5	55	200	23.45	--	7.28	0.585	4.51	0.34	16	46.4	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL
Total Organic Carbon	40 mL Glass	2	H2SO4
Dissolved Iron	125 mL Plastic	1	HNO3
Total Iron	125 mL Plastic	2	HNO3
Sulfate	250 mL Plastic	1	None
Dissolved gasses	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

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 Location:	Outside of gate	Well Locked at Arrival:	yes
Condition of Well:	Broken thread tabs,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	30112891	Well ID	MWF16-25	Date	06/01/2022
Project Name/Location	RACER PNC		Weather(°F)	73.9 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)	25.51	Total Depth (ft-bmp)	37.2	Water Column (ft)	11.69
Purge Start	09:30	Pump Intake (ft-bmp)	35.5	Purge Method	Low-Flow
Purge End	10:15	Volumes Purged	0.79	Sample ID	MWF16-25_GW-060122
Sample Time	13:10	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.9
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
09:33	0	0	200	25.56	--	7.23	0.72	17.1	3.47	18.2	72.4	--	--
09:38	5	5	200	25.56	--	7.28	0.72	7.63	5.37	18.6	67.8	--	--
09:43	5	10	200	25.56	--	7.29	0.73	8.84	5.3	18.8	66.1	--	--
09:48	5	15	200	25.56	--	7.28	0.73	8.17	5.49	18.1	66.6	--	--
09:53	5	20	200	25.56	--	7.27	0.73	2.35	4.23	19.2	63.9	--	--
09:58	5	25	200	25.56	--	7.27	0.73	0.02	4.93	19.7	60.6	--	--
10:03	5	30	200	25.56	--	7.27	0.73	0.02	4.79	19.9	59.8	--	--
10:08	5	35	200	25.56	--	7.26	0.74	0.02	4.92	19.8	60.8	Small black particulates, clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: Grass needs to be cut nearby

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 tall grass outside of fence	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: 2035

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	30112891	Well ID	MWF7-02	Date	06/01/2022
Project Name/Location	RACER PNC		Weather(°F)	73.9 degrees F and 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)	18.97	Total Depth (ft-bmp)	22.95	Water Column (ft)	3.98
Purge Start	08:29	Pump Intake (ft-bmp)	21.5	Purge Method	Low-Flow
Purge End	09:08	Volumes Purged	3.08	Sample ID	MWF7-02_GW-060122
Sample Time	09:05	Gallons Purged	2.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.65
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
08:31	0	0	200	19.12	--	7.13	1.03	3.31	3.84	13.4	104.7	--	--
08:36	5	5	180	19.08	--	7.11	0.89	0.42	3.51	13.7	89.6	--	--
08:41	5	10	180	19.08	--	7.04	0.86	0.02	3.47	13.7	83.9	--	--
08:46	5	15	180	19.08	--	7.06	0.85	0.02	3.38	14	81	--	--
08:51	5	20	180	19.08	--	7.09	0.81	0.02	3.46	14	76.1	--	--
08:56	5	25	180	19.08	--	7.09	0.8	0.02	3.49	13.8	75.4	--	--
09:01	5	30	180	19.08	--	7.1	0.82	0.02	3.44	13.8	75.1	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: On ramp Fiero South	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: 2035

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	30112891	Well ID	MWOS-09R	Date	06/01/2022
Project Name/Location	RACER PNC		Weather(°F)	75.9 degrees F and Mostly Cloudy. The wind is blowing W at 9.2 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Well Casing Material	PVC				
Static Water Level (ft-bmp)	26.71	Total Depth (ft-bmp)	32.2	Water Column (ft)	5.49
Gallons in Well	0.89				
Purge Start	10:28	Pump Intake (ft-bmp)	32.5	Purge Method	Low-Flow
Purge Equipment	Peristaltic				
Purge End		Volumes Purged	1.12	Sample ID	MWOS-09R_GW-060122
Sampled by	Christina Weaver				
Sample Time	11:05	Gallons Purged	1.00	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
10:30	0	0	220	26.72	--	7.17	0.94	26.3	0.83	18.3	84.2	--	--
10:35	5	5	220	26.72	--	7.07	0.92	27.4	0.81	19.2	76.4	--	--
10:40	5	10	220	26.72	--	6.99	0.93	29	0.78	19.2	75.5	--	--
10:45	5	15	220	26.72	--	6.98	0.92	28	0.6	19.5	72.5	--	--
10:50	5	20	220	26.72	--	7	0.92	28.9	0.57	19.2	63.1	--	--
10:55	5	25	220	26.72	--	7.04	0.92	28.5	0.55	19.1	60.8	--	--
11:00	5	30	220	26.72	--	7.01	0.92	27.8	0.55	19	60.5	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: Sidewalk	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: 2035

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	30112891	Well ID	TW-12-22	Date	06/02/2022
Project Name/Location	RACER PNC		Weather(°F)	53.1 degrees F and Cloudy. The wind is blowing E at 3.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	1
Static Water Level (ft-bmp)	22.32	Total Depth (ft-bmp)	32.69	Water Column (ft)	10.37
Purge Start	08:50	Pump Intake (ft-bmp)	31	Purge Method	Low-Flow
Purge End	10:15	Volumes Purged	5.95	Sample ID	TW-12-22_060222
Sample Time	10:00	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.42
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
08:53	0	0	200	22.35	--	7.23	0.74	658	0.43	14.8	76	--	--
08:58	5	5	200	22.35	--	7.27	0.68	70.9	0.87	14.6	42.3	--	--
09:03	5	10	200	22.35	--	7.31	0.68	28	0.92	14.7	31.2	--	--
09:08	5	15	220	22.35	--	7.31	0.66	13.6	1.1	14.3	30.8	--	--
09:13	5	20	220	22.34	--	7.31	0.66	10.1	1.45	14.3	24.4	--	--
09:18	5	25	220	22.34	--	7.33	0.66	5.26	1.44	14.3	22.2	--	--
09:23	5	30	220	22.34	--	7.35	0.66	3.05	1.47	14.2	11.4	--	--
09:28	5	35	220	22.34	--	7.36	0.66	0.85	1.46	14.1	1.8	--	--
09:33	5	40	220	22.34	--	7.37	0.66	0.74	1.47	14.1	-9.8	--	--
09:38	5	45	220	22.34	--	7.38	0.66	0.58	1.47	14.1	-19.7	--	--
09:43	5	50	220	22.34	--	7.4	0.66	0.02	1.46	14.4	-33.7	--	--
09:48	5	55	220	22.34	--	7.42	0.66	0.02	1.47	14.5	-43.7	--	--
09:53	5	60	220	22.34	--	7.42	0.65	0.02	1.47	14.6	-48.6	--	--
09:58	5	65	220	22.34	--	7.42	0.65	0.02	1.5	14.5	-51.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL
Dissolved gasses	40 mL Glass	3	HCL
Sulfate	250 mL Plastic	1	None
Dissolved Iron	125 mL Plastic	1	HNO3
Total Iron	125 mL Plastic	1	HNO3
Total Organic Carbon	40 mL Glass	2	H2SO4

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:	Onsite Fiero North	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	30112891	Well ID	MW-02-17	Date	09/20/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	73.0 degrees F and Cloudy. The wind is blowing W/SW at 5.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	25.93	Total Depth (ft-bmp)	29.71	Water Column (ft) 3.78	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time		Gallons Purged		Replicate/ Code No. NA	Sample Type

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	25.93	--	7.25	1.29	16.4	0.61	16.1	67.7	--	--
14:43	5	5	150	25.93	--	7.18	1.32	3.08	0.13	15.6	52.8	--	--
14:48	5	10	150	25.93	--	7.19	1.36	1.36	0.13	15.8	27.6	--	--
14:53	5	15	150	25.93	--	7.21	1.36	0.66	0.2	15.4	12.1	--	--
14:58	5	20	150	25.94	--	7.22	1.35	0.44	0.24	15.7	-3.3	--	--
15:03	5	25	150	25.94	--	7.23	1.36	0.48	0.36	15.4	-13.7	--	--
15:08	5	30	150	25.94	--	7.24	1.35	0.18	0.4	15.3	-22.6	--	--
15:13	5	35	150	25.94	--	7.25	1.35	0.52	0.49	15.3	-31.5	--	--
15:18	5	40	150	25.94	--	7.27	1.35	0.19	0.61	15.5	-39	--	--
15:23	5	45	150	25.94	--	7.27	1.34	0.56	0.69	15.3	-43.7	--	--
15:28	5	50	150	25.94	--	7.28	1.33	0.11	0.78	15.4	-47.8	--	--
15:33	5	55	150	25.94	--	7.28	1.33	0.02	0.85	15.7	-51	--	--
15:38	5	60	150	25.94	--	7.28	1.34	0.02	0.75	15.6	-53.6		

Constituent Sampled	Container	Number	Preservative

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	30112891	Well ID	MW-02-17	Date	09/22/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	57.9 degrees F and Mostly Cloudy. The wind is blowing N/NW at 13.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	25.94	Total Depth (ft-bmp)	29.71	Water Column (ft) 3.77	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 14:45		Gallons Purged		Replicate/ Code No. NA	Sample Type

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
13:53	0	0	150	25.95	--	7.19	1.39	4.07	1.23	15.3	139.9	--	--
13:58	5	5	150	25.95	--	7.07	1.38	0.91	0.79	14.8	53.4	--	--
14:03	5	10	150	25.95	--	7	1.37	1.07	0.79	15.6	12.8	--	--
14:08	5	15	150	25.95	--	6.99	1.37	0.84	0.73	14.8	-5.3	--	--
14:13	5	20	150	25.95	--	7.02	1.37	0.5	0.74	14.7	-23.8	--	--
14:18	5	25	150	25.95	--	7.05	1.36	0.75	0.84	14.5	-35	--	--
14:23	5	30	150	25.95	--	7.06	1.35	0.43	0.91	14.4	-43	--	--
14:28	5	35	150	25.95	--	7.07	1.35	0.49	0.99	14.3	-46.9	--	--
14:33	5	40	150	25.95	--	7.09	1.33	0.08	1.05	14.6	-48.2	--	--
14:38	5	45	150	25.95	--	7.1	1.34	0.34	1.07	14.3	-50.2		

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	30112891	Well ID	MW-05-18	Date	09/20/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	66.2 degrees F and Mostly Cloudy. The wind is blowing west a 5 mph	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	27.22	Total Depth (ft-bmp)	33.6	Water Column (ft) 6.38	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 12:55		Gallons Purged		Replicate/ Code No. NA	Sample Type

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
12:19	0	0	150	27.22	--	7.45	0.73	10.5	1.69	16.7	20.2	--	--
12:24	5	5	150	27.22	--	7.38	0.71	4.56	0.19	15.2	17.8	--	--
12:29	5	10	150	27.22	--	7.38	0.71	4.89	0.01	15.1	15.8	--	--
12:34	5	15	150	27.22	--	7.38	0.71	4.55	0.01	15.5	14.8	--	--
12:39	5	20	150	27.22	--	7.37	0.72	3.18	0.01	14.9	15.4	--	--
12:44	5	25	150	27.22	--	7.37	0.72	2.43	0.01	15.1	16.4	--	--
12:49	5	30	150	27.22	--	7.37	0.72	2.42	0.01	15.1	16.6		

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	30112891	Well ID	MW-06-20	Date	09/20/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	73.9 degrees F and 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)	25.94	Total Depth (ft-bmp)	29.2	Water Column (ft)	3.26
Purge Start	13:10	Pump Intake (ft-bmp)	27	Purge Method	Low-Flow
Purge End	13:53	Volumes Purged	3.77	Sample ID	MW-06-20_GW-092022
Sample Time	13:45	Gallons Purged	2.00	Replicate/ Code No.	DUP-05
				Well Casing Material	PVC
				Gallons in Well	0.53
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
13:11	0	0	250	25.96	--	7.38	1.34	4	7.17	20.7	84.1	--	--
13:16	5	5	200	25.96	--	7.26	0.96	3.51	2.11	18.3	79.4	--	--
13:21	5	10	200	25.96	--	7.06	0.87	1.56	2.36	17.1	84.3	--	--
13:26	5	15	200	25.96	--	7.06	0.87	0.73	1.98	17	79.6	--	--
13:31	5	20	200	25.96	--	7.09	0.88	0.02	2.09	16.7	75.1	--	--
13:36	5	25	200	25.96	--	7.08	0.88	0.02	2.02	16.8	75.2	--	--
13:41	5	30	200	25.96	--	7.09	0.88	0.02	2.03	16.8	77.7	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: Driveway	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: 2035

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	30112891	Well ID	MW-07-20	Date	09/20/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	73.9 degrees F and Cloudy. The wind is blowing SW at 6.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	26.59	Total Depth (ft-bmp)	30.18	Water Column (ft) 3.59	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 13:50		Gallons Purged		Replicate/ Code No. NA	Sample Type

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	150	26.65	--	7.65	0.8	5.31	3.36	16.4	40.4	--	--
13:20	5	5	150	26.65	--	7.56	0.77	1.07	2.65	15.8	43.5	--	--
13:25	5	10	150	26.65	--	7.54	0.8	0.74	2.99	15.6	47.8	--	--
13:30	5	15	150	26.63	--	7.55	0.8	0.78	3.49	15.6	48	--	--
13:35	5	20	150	26.63	--	7.55	0.81	0.16	3.4	15.5	48.4	--	--
13:40	5	25	150	26.63	--	7.54	0.81	0.1	3.43	15.4	49.1	--	--
13:45	5	30	150	26.63	--	7.55	0.82	0.02	3.49	15.5	49.8		None

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	30112891	Well ID	MW-08-21	Date	09/20/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	66.2 degrees F and Mostly Cloudy. The wind is blowing undefined at 0.0 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	26.72	Total Depth (ft-bmp)	30.28	Water Column (ft)	3.56
Purge Start	12:15	Pump Intake (ft-bmp)	28	Purge Method	Low-Flow
Purge End	12:59	Volumes Purged	4.83	Sample ID	MW-08-21_GW-092022
Sample Time	12:55	Gallons Purged	2.80	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.58
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
12:18	0	0	250	26.73	--	7.35	1.53	3.14	11.64	18.7	159.8	--	--
12:23	5	5	250	26.73	--	7.16	1.38	6.54	9.25	17	125.2	--	--
12:28	5	10	250	26.73	--	7.14	1.39		3.09	17.5	126.5	--	--
12:33	5	15	250	26.73	--	7.19	1.37	5.32	2.91	18	116.2	--	--
12:38	5	20	250	26.73	--	7.2	1.37	2.52	3.23	17.9	112.1	--	--
12:43	5	25	250	26.73	--	7.18	1.33	0.02	2.9	17.3	109.8	--	--
12:48	5	30	250	26.73	--	7.17	1.33	0.02	3.05	17.4	106.4	--	--
12:53	5	35	250	26.73	--	7.18	1.33	0.02	2.81	17.4	103.1	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: Driveway	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	30112891	Well ID	MW-09-22	Date	09/21/2022
Project Name/Location	RACER PNC/Pontiac		Weather(°F)	80.1 degrees F and Mostly Cloudy. The wind is blowing W/SW at 12.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	20.88	Total Depth (ft-bmp)	32.86	Water Column (ft) 11.98	Gallons in Well
Purge Start	15:26	Pump Intake (ft-bmp)	26.38	Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End	16:00	Volumes Purged		Sample ID MW-09-22_GW-092122	Sampled by Leticia Ferreira
Sample Time	15:58	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
15:27	0	0	200	20.88	--	7.28	0.518	0.02	6.14	16.5	93.5	--	--
15:32	5	5	200	20.88	--	7.21	0.538	0.02	4.5	16.3	88.5	--	--
15:37	5	10	200	20.88	--	7.2	0.546	0.02	4.521	16.3	86.8	--	--
15:42	5	15	200	20.88	--	7.2	0.548	0.02	4.521	16.3	86.01	--	--
15:47	5	20	200	20.88	--	7.25	0.55	0.02	4.54	16.3	78.22	--	--
15:52	5	25	200	20.88	--	7.25	0.56	0.02	4.62	16.2	78.06	--	--
15:57	5	30	200	20.88	--	7.24	0.55	0.02	4.62	16	79.3	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:	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	30112891	Well ID	MW-11-22	Date	09/23/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	51.1 degrees F and Mostly Clear. The wind is blowing N/NW at 9.2 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)	34.73	Water Column (ft)	7.23
Purge Start	10:57	Pump Intake (ft-bmp)	34.5	Purge Method	Low-Flow
Purge End	12:06	Volumes Purged	2.56	Sample ID	MW-11-22_GW-092322
Sample Time	12:03	Gallons Purged	3.00	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.17
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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	250	27.52	--	7.41	0.541	75	8.16	14.9	113.2	--	--
11:05	5	5	250	27.52	--	7.25	0.563	70.3	8.16	14.9	90.2	--	--
11:10	5	10	250	27.52	--	7.26	0.554	68.7	5.5	14.8	98.8	--	--
11:15	5	15	250	27.52	--	7.28	0.56	49.3	5.37	15.3	92.9	--	--
11:20	5	20	250	27.52	--	7.31	0.56	46.5	5.41	15.2	90.9	--	--
11:25	5	25	250	27.52	--	7.3	0.55	42.6	5.25	15.3	90.6	--	--
11:30	5	30	250	27.52	--	7.3	0.56	44.1	5.79	15.3	88.8	--	--
11:35	5	35	250	27.52	--	7.29	0.56	43.1	5.89	15.3	87.7	--	--
11:40	5	40	250	27.52	--	7.29	0.55	38.2	5.84	15.3	85.4	--	--
11:45	5	45	250	27.52	--	7.3	0.56	36.9	5.83	15.4	82.3	--	--
11:50	5	50	250	27.52	--	7.32	0.56	32.2	5.89	15.5	80.6	--	--
11:55	5	55	250	27.52	--	7.29	0.56	30.1	6.17	15.4	81.2	--	--
12:00	5	60	250	27.52	--	7.3	0.56	31.2	6.19	15.4	82.3	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: St.Claire Street Grass	Well Locked at Arrival: no
Condition of Well: Good condition	Well Locked at Departure: no
Well Completion: Flush mount	Key Number To Well: No Lock

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	30112891	Well ID	MW-13-22	Date	09/21/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	72.0 degrees F and Thunderstorms and Rain. The wind is blowing W/SW at 10.3 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	22.04	Total Depth (ft-bmp)	26.72	Water Column (ft) 4.68	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 13:20		Gallons Purged		Replicate/ Code No. NA	Sample Type

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
12:22	0	0	150	22.15	--	6.87	0.89	2.98	0.9	16.3	-115.8	--	--
12:27	5	5	150	22.15	--	6.63	0.89	2.64	0.28	16.2	-120.1	--	--
12:32	5	10	150	22.15	--	6.77	0.88	2.11	0.49	16.7	-97.1	--	--
12:37	5	15	150	22.15	--	6.6	0.89	2.11	0.36	16.9	-94.7	--	--
12:55	18	33	150	22.15	--	6.67	0.91	1.94	0.99	17.1	-102.3	--	--
13:00	5	38	150	22.15	--	6.68	0.89	0.78	0.43	17.1	-103.1	--	--
13:05	5	43	150	22.15	--	6.54	0.89	1.73	0.4	17.2	-98.2	--	--
13:10	5	48	150	22.15	--	6.54	0.89	2.63	0.38	17.1	-99.6	--	--
13:15	5	53	150	22.15	--	6.58	0.89	1.12	0.37	17.4	-102.1		

Comments: Time gap in field parameters - Had to meet with courier to give samples

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	30112891	Well ID	MW-14-22	Date	09/21/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	75.9 degrees F and Mostly Cloudy. The wind is blowing S/SW at 5.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	22.40	Total Depth (ft-bmp)	34.65	Water Column (ft) 12.25	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 14:25		Gallons Purged		Replicate/ Code No. NA	Sample Type

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	22.42	--	7.35	0.74	22.4	1.27	17	19.4	--	--
13:43	5	5	150	22.42	--	7.05	0.74	2.61	0.99	18.5	32.2	--	--
13:48	5	10	150	22.42	--	7.01	0.74	1.84	0.82	17.2	37.2	--	--
13:53	5	15	150	22.42	--	7.02	0.74	1.89	0.71	17	39.7	--	--
13:58	5	20	150	22.42	--	7.04	0.74	1.24	0.66	17.1	40.1	--	--
14:03	5	25	150	22.42	--	7.06	0.74	1.29	0.6	17.1	39.8	--	--
14:08	5	30	150	22.42	--	7.08	0.74	0.73	0.5	17.2	39.2	--	--
14:13	5	35	150	22.42	--	7.1	0.74	1.1	0.48	17.4	38.4	--	--
14:18	5	40	150	22.42	--	7.11	0.73	0.62	0.48	17.4	38.4		

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	30112891	Well ID	MW8-01	Date	09/22/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	54.0 degrees F and Partly Cloudy. The wind is blowing NW at 15.0 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	18.32	Total Depth (ft-bmp)	27.64	Water Column (ft) 9.32	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 09:00		Gallons Purged		Replicate/ Code No. DUP-03	Sample Type

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
08:11	0	0	150	18.34	--	6.78	1.4	9.51	1.87	13.1	138.3	--	--
08:16	5	5	150	18.34	--	6.63	1.3	4	0.64	13.5	125.5	--	--
08:21	5	10	150	18.34	--	6.63	1.27	1.98	0.56	13.4	121.5	--	--
08:26	5	15	150	18.34	--	6.67	1.25	1.5	0.69	13.4	115.5	--	--
08:31	5	20	150	18.34	--	6.7	1.22	2.11	1.02	13.2	110.6	--	--
08:36	5	25	150	18.34	--	6.73	1.21	1.09	1.36	13.3	106.5	--	--
08:41	5	30	150	18.34	--	6.76	1.2	0.82	1.63	13.3	103.7	--	--
08:46	5	35	150	18.34	--	6.78	1.19	0.68	1.82	13.3	101.9	--	--
08:51	5	40	150	18.34	--	6.79	1.17	0.73	1.83	13.4	100.8	--	--
08:56	5	45	150	18.34	--	6.8	1.18	0.47	1.83	13.3	100		

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	30112891	Well ID	MWF12-01R	Date	09/22/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	55.0 degrees F and Mostly Cloudy. The wind is blowing N/NW at 15.0 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	20.50	Total Depth (ft-bmp)	23.25	Water Column (ft) 2.75	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 13:30		Gallons Purged		Replicate/ Code No. NA	Sample Type

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	150	20.55	--	6.89	2.5	2.32	0.92	14.4	149.6	--	--
13:00	5	5	150	20.55	--	6.81	2.49	1.99	0.65	14.7	152	--	--
13:05	5	10	150	20.55	--	6.82	2.46	0.96	0.54	14.5	147.8	--	--
13:10	5	15	150	20.55	--	6.86	2.4	0.54	0.61	14.1	143.4	--	--
13:15	5	20	150	20.55	--	6.88	2.37	0.39	0.61	14	140.6	--	--
13:20	5	25	150	20.55	--	6.89	2.35	0.38	0.6	14	138.7	--	--
13:25	5	30	150	20.55	--	6.9	2.33	0.27	0.58	14	137.1		

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	30112891	Well ID	MWF12-02R	Date	09/21/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	66.0 degrees F and Mostly Clear. The wind is blowing S/SW at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	13.65	Total Depth (ft-bmp)	22.5	Water Column (ft) 8.85	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time	10:05	Gallons Purged		Replicate/ Code No. DUP-04	Sample Type

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
09:11	0	0	150	13.67	--	6.93	1.15	4.79	1.14	16	214.1	--	--
09:16	5	5	150	13.67	--	6.74	1.06	5.41	0.32	15.6	205.3	--	--
09:21	5	10	150	13.67	--	6.78	1.1	4.23	0.28	15.5	188.4	--	--
09:26	5	15	150	13.67	--	6.84	1.16	3.32	0.19	15.4	173.6	--	--
09:31	5	20	150	13.67	--	6.89	1.19	2.31	0.18	15.5	159.3	--	--
09:36	5	25	150	13.67	--	6.92	1.22	1.97	0.19	15.6	145.6	--	--
09:41	5	30	150	13.67	--	6.94	1.22	0.99	0.19	15.8	133.4	--	--
09:46	5	35	150	13.67	--	6.96	1.24	1.3	0.2	15.8	123.4	--	--
09:51	5	40	150	13.67	--	6.98	1.23	0.94	0.2	15.8	117.3	--	--
09:56	5	45	150	13.67	--	6.98	1.24	1.27	0.21	15.4	111.3	--	--
10:01	5	50	150	13.67	--	6.98	1.24	1.09	0.21	15.1	108.3		

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	30112891	Well ID	MWF16-05	Date	09/22/2022
Project Name/Location	RACER PNC/Pontiac		Weather(°F)	52.0 degrees F and Mostly Clear. The wind is blowing NW at 12.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	20.50	Total Depth (ft-bmp)	22.73	Water Column (ft) 2.23	Gallons in Well
Purge Start	08:37	Pump Intake (ft-bmp)	21	Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End	09:12	Volumes Purged		Sample ID MWF16-05_GW-092222	Sampled by Leticia Ferreira
Sample Time	09:10	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
08:38	0	0	200	20.50	--	7.25	0.79	97.5	13.8	13.5	198.1	--	--
08:43	5	5	200	20.50	--	7.17	1.28	181	8.63	13.4	173.1	--	--
08:48	5	10	200	20.50	--	7.23	1.24	48.2	8.56	13.4	159	--	--
08:53	5	15	200	20.50	--	7.27	1.23	19	8.59	13.4	158.8	--	--
08:58	5	20	200	20.50	--	7.27	1.2	8.61	7.8	13.4	159.1	--	--
09:03	5	25	200	20.50	--	7.28	1.2	5.87	7.8	13.3	158.3	--	--
09:08	5	30	200	20.50	--	7.28	1.2	3.56	7.8	13.4	159.6	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:	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	30112891	Well ID	MWF16-06	Date	09/22/2022
Project Name/Location	RACER PNC/Pontiac		Weather(°F)	55.0 degrees F and Mostly Cloudy. The wind is blowing N/NW at 15.0 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	14.70	Total Depth (ft-bmp)	28.72	Water Column (ft) 14.02	Gallons in Well
Purge Start	11:34	Pump Intake (ft-bmp)	22	Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End	12:09	Volumes Purged		Sample ID MWF16-06_GW-092222	Sampled by Leticia Ferreira
Sample Time	12:07	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
11:35	0	0	200	14.70	--	7.58	0.481	25.6	7.63	14.8	135.1	--	--
11:40	5	5	200	14.70	--	7.49	0.479	0.85	7.99	14.7	132.1	--	--
11:45	5	10	200	14.80	--	7.5	0.486	0.24	7.41	14.8	127.7	--	--
11:50	5	15	200	14.80	--	7.57	0.486	0.02	7.22	14.9	121.9	--	--
11:55	5	20	200	14.80	--	7.56	0.486	0.02	7.39	14.9	120.9	--	--
12:00	5	25	200	14.80	--	7.56	0.493	0.02	7.29	14.8	120.9	--	--
12:05	5	30	200	14.80	--	7.52	0.492	0.02	7.29	14.8	121.1	Clear	

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:	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	30112891	Well ID	MWF16-12	Date	09/21/2022
Project Name/Location	RACER PNC/Pontiac		Weather(°F)	70.0 degrees F and Mostly Clear. The wind is blowing S/SW at 10.3 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	13.70	Total Depth (ft-bmp)	18.9	Water Column (ft) 5.2	Gallons in Well
Purge Start	09:56	Pump Intake (ft-bmp)	16.95	Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End	10:42	Volumes Purged		Sample ID MWF16-13_GW-092122	Sampled by Leticia Ferreira
Sample Time	10:40	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
09:57	0	0	200	13.70	--	7.16	0.63	66.4	5.21	16.2	131.6	--	--
10:02	5	5	200	13.70	--	6.98	0.64	113	5.06	16.1	135.2	--	--
10:07	5	10	200	13.70	--	6.93	0.701	46.2	4.38	16.3	131.4	--	--
10:12	5	15	200	13.70	--	7.02	0.73	12.4	3.63	16.3	123.1	--	--
10:17	5	20	200	13.70	--	7.07	0.73	7.17	3.52	16.1	118.6	--	--
10:22	5	25	200	13.70	--	7.09	0.71	6.03	3.63	16.1	116.2	--	--
10:27	5	30	200	13.70	--	7.1	0.71	4.89	3.51	16.2	114	--	--
10:32	5	35	200	13.70	--	7.11	0.71	4.38	3.52	16.1	112.5	--	--
10:37	5	40	200	13.70	--	7.12	0.716	2.89	3.5	16	111	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:	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	30112891	Well ID	MWF16-15	Date	09/21/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	72.0 degrees F and Mostly Cloudy. The wind is blowing S/SW at 10.3 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	21.93	Total Depth (ft-bmp)	35.45	Water Column (ft) 13.52	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 11:20		Gallons Purged		Replicate/ Code No. NA	Sample Type

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
10:31	0	0	150	21.95	--	7.28	0.85	1.21	1.27	16	195.8	--	--
10:36	5	5	150	21.95	--	7.04	0.84	0.02	0.52	16.4	187.9	--	--
10:41	5	10	150	21.95	--	6.95	0.85	0.13	0.34	16.3	173.2	--	--
10:46	5	15	150	21.95	--	6.96	0.87	0.69	0.29	16.2	161.1	--	--
10:51	5	20	150	21.95	--	6.98	0.88	0.66	0.29	15.6	151.6	--	--
10:56	5	25	150	21.95	--	6.97	0.87	0.02	0.27	15.7	142.9	--	--
11:01	5	30	150	21.95	--	6.98	0.88	0.68	0.3	15.7	135.4	--	--
11:06	5	35	150	21.95	--	6.99	0.89	0.73	0.3	15.7	129.7	--	--
11:11	5	40	150	21.95	--	7	0.9	0.99	0.29	15.5	125.1	--	--
11:16	5	45	150	21.95	--	6.99	0.89	0.98	0.29	15.4	122.3		None

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	30112891	Well ID	MWF16-16	Date	09/22/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	53.1 degrees F and Mostly Clear.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	22.55	Total Depth (ft-bmp)	31.3	Water Column (ft) 8.75	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 10:00		Gallons Purged		Replicate/ Code No. NA	Sample Type

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
09:23	0	0	150	22.55	--	7.52	0.65	13.8	1.15	14.6	96.3	--	--
09:28	5	5	150	22.55	--	7.47	0.64	4.31	0.73	15	95.9	--	--
09:33	5	10	150	22.55	--	7.46	0.64	3.35	0.78	15.1	95.4	--	--
09:38	5	15	150	22.55	--	7.43	0.62	3.17	1.02	14.9	96.4	--	--
09:43	5	20	150	22.56	--	7.38	0.62	2.03	1.07	15	98.7	--	--
09:48	5	25	150	22.56	--	7.36	0.62	1.51	1.08	15	99.4	--	--
09:53	5	30	150	22.56	--	7.34	0.63	0.98	1.08	14.6	100.4		

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	30112891	Well ID	MWF16-17	Date	09/21/2022
Project Name/Location	RACER PNC/Pontiac		Weather(°F)	80.1 degrees F and Mostly Cloudy. The wind is blowing W/SW at 12.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	19.79	Total Depth (ft-bmp)	31.52	Water Column (ft) 11.73	Gallons in Well
Purge Start	14:25	Pump Intake (ft-bmp)	25.81	Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End	15:00	Volumes Purged		Sample ID MWG16-17_GW-092122	Sampled by Leticia Ferreira
Sample Time	14:58	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
14:26	0	0	250	19.79	--	7.03	1.2	34.1	5.2	15.8	123.1	--	--
14:31	5	5	200	19.79	--	7.03	1.6	9.32	5.27	15.7	113	--	--
14:36	5	10	200	19.79	--	7.04	1.35	1.64	5.22	15.4	101	--	--
14:41	5	15	200	19.79	--	7.06	1.35	0.02	5.103	15.3	103	--	--
14:46	5	20	200	19.79	--	7.06	1.34	0.02	5.106	15.3	103.1	--	--
14:51	5	25	200	19.79	--	7.07	1.34	0.02	5.106	15.3	101.32	--	--
14:56	5	30	200	19.79	--	7.07	1.32	0.02	5.153	15.3	101.4	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:	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	30112891	Well ID	MWF16-18	Date	09/22/2022
Project Name/Location	RACER PNC/Pontiac		Weather(°F)	53.1 degrees F and Mostly Clear.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	20.94	Total Depth (ft-bmp)	31.97	Water Column (ft) 11.03	Gallons in Well
Purge Start	09:44	Pump Intake (ft-bmp)	26	Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End	10:19	Volumes Purged		Sample ID MWF16-18_GW-092222	Sampled by Leticia Ferreira
Sample Time	10:17	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
09:45	0	0	200	20.94	--	7.13	1.32	1	6.87	13.8	133.1	--	--
09:50	5	5	200	20.94	--	7.07	0.82	0.02	3.31	13.8	130	--	--
09:55	5	10	200	20.94	--	7.07	0.76	0.02	3.37	13.8	130.1	--	--
10:00	5	15	200	20.94	--	7.07	0.8	0.02	3.3	13.6	130.5	--	--
10:05	5	20	200	20.94	--	7.07	0.81	0.02	3.35	13.5	130.1	--	--
10:10	5	25	200	20.94	--	7.06	0.8	0.02	3.35	13.4	130	--	--
10:15	5	30	200	20.94	--	7.06	0.81	0.02	3.4	13.4	130	Clear	

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:	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	30112891	Well ID	MWF16-20	Date	09/21/2022
Project Name/Location	RACER PNC/Pontiac		Weather(°F)	Sunny	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	14.69	Total Depth (ft-bmp)	24.57	Water Column (ft) 9.88	Gallons in Well
Purge Start	12:57	Pump Intake (ft-bmp)	19.5	Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End	13:43	Volumes Purged		Sample ID MWF16-20_GW-092122	Sampled by Leticia Ferreira
Sample Time	13:40	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
12:59	0	0	150	14.69	--	7.07	0.502	86.4	8.45	16.3	116.8	--	--
13:04	5	5	150	14.69	--	16.5	0.518	93.1	6.57	16.5	112.8	--	--
13:09	5	10	200	14.69	--	7.08	0.6	72.3	6.15	16.6	103	--	--
13:14	5	15	200	14.69	--	7.07	0.66	57.4	7.66	16.8	97.8	--	--
13:19	5	20	200	14.69	--	7.1	0.74	40.5	5.53	16.9	94.5	--	--
13:24	5	25	200	14.69	--	7.08	0.77	28.6	4.39	16.8	90.01	--	--
13:29	5	30	200	14.69	--	7.08	0.7	18.2	4.3	16.8	85	--	--
13:34	5	35	200	14.69	--	7.08	0.7	9.65	4.3	16.8	84.5	--	--
13:39	5	40	200	14.69	--	7.08	0.71	7.03	4.29	16.8	84.5	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: Was able to pump water out from the surrounding well.

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	30112891	Well ID	MWF16-22	Date	09/22/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	54.0 degrees F and Mostly Cloudy. The wind is blowing NW at 15.0 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	23.30	Total Depth (ft-bmp)	33.95	Water Column (ft) 10.65	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 11:05		Gallons Purged		Replicate/ Code No. NA	Sample Type

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
10:26	0	0	150	23.31	--	7.38	0.63	9.73	2.01	16.3	92.4	--	--
10:31	5	5	150	23.31	--	7.17	0.64	6.48	1.42	16.3	103	--	--
10:36	5	10	150	23.31	--	7.07	0.64	6.94	1.43	16.4	107.6	--	--
10:46	10	20	150	23.31	--	7.21	0.66	10.6	7.64	16.1	103.1	--	--
10:51	5	25	150	23.31	--	7.21	0.64	4.95	7.59	15.7	105.3	--	--
10:56	5	30	150	23.31	--	7.11	0.64	3.95	7.38	15.7	110.8	--	--
11:01	5	35	150	23.31	--	7.11	0.63	3.29	7.18	15.6	112.5		

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	30112891	Well ID	MWF16-24	Date	09/22/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	55.0 degrees F and Mostly Cloudy. The wind is blowing NW at 12.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	23.04	Total Depth (ft-bmp)	29.84	Water Column (ft) 6.8	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 11:55		Gallons Purged		Replicate/ Code No. NA	Sample Type

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
11:20	0	0	150	23.04	--	7.38	0.492	2.84	8.75	15.5	104.2	--	--
11:25	5	5	150	23.06	--	7.25	0.484	1.58	7.79	15.2	114.6	--	--
11:30	5	10	150	23.09	--	7.15	0.484	0.53	8.6	15	122.7	--	--
11:35	5	15	150	23.10	--	7.15	0.483	0.77	8.62	15	124.1	--	--
11:40	5	20	150	23.10	--	7.17	0.482	0.56	8.14	15.5	124.4	--	--
11:45	5	25	150	23.10	--	7.22	0.482	0.47	7.91	15.6	123.4	--	--
11:50	5	30	150	23.10	--	7.27	0.482	0.71	7.87	15.7	121.8		

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	30112891	Well ID	MWF16-25	Date	09/23/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	46.0 degrees F and Mostly 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)	26.00	Total Depth (ft-bmp)	36.78	Water Column (ft)	10.78
Purge Start	09:50	Pump Intake (ft-bmp)	34.5	Purge Method	Low-Flow
Purge End	10:42	Volumes Purged	1.43	Sample ID	MWF16-25_GW-092322
Sample Time	10:38	Gallons Purged	2.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.75
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
09:55	0	0	250	26.01	--	7.34	0.66	72.3	4.11	15	148.1	--	--
10:00	5	5	250	26.01	--	7.32	0.64	36.5	4.23	14.9	139.6	--	--
10:05	5	10	250	26.02	--	7.29	0.64	23.5	3.31	15	145.6	--	--
10:10	5	15	250	26.02	--	7.28	0.64	12.3	3.35	14.8	136.7	--	--
10:15	5	20	250	26.02	--	7.27	0.65	13.8	3.3	15	131.9	--	--
10:20	5	25	250	26.02	--	7.28	0.65	9.63	3.34	15	132.3	--	--
10:25	5	30	250	26.02	--	7.22	0.65	7.1	3.45	15.1	126.1	--	--
10:30	5	35	250	26.02	--	7.22	0.65	6.2	3.56	15.3	120.9	--	--
10:35	5	40	250	26.02	--	7.24	0.65	6.2	3.56	15.3	117	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL
1,4-Dioxane 8270D SIM	40 mL Glass	0	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: St.Claire street near tree in grass	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: 2035

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	30112891	Well ID	MWF7-02	Date	09/20/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	60.8 degrees F and Mostly Clear. The wind is blowing W 4 mph	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	19.65	Total Depth (ft-bmp)	22.75	Water Column (ft) 3.1	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 10:35		Gallons Purged		Replicate/ Code No. NA	Sample Type

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
09:58	0	0	150	19.82	--	7.56	0.72	40.9	3.53	15.9	108.4	--	--
10:03	5	5	150	19.80	--	7.44	0.72	38.3	3.41	15.6	110.2	--	--
10:08	5	10	150	19.81	--	7.39	0.7	8.44	3.33	15.5	112.3	--	--
10:13	5	15	150	19.81	--	7.44	0.69	2.49	3.19	15.6	108.2	--	--
10:18	5	20	150	19.81	--	7.46	0.7	1.47	3.24	15.6	107.2	--	--
10:23	5	25	150	19.81	--	7.46	0.69	1.26	3.27	15.6	106.6	--	--
10:28	5	30	150	19.81	--	7.47	0.69	0.89	3.25	15.6	106.5		

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	30112891	Well ID	MWF7-03	Date	09/20/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	66.2 degrees F and Mostly Cloudy. The wind is blowing W at 6mph	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	21.64	Total Depth (ft-bmp)	32.58	Water Column (ft) 10.94	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 11:45		Gallons Purged		Replicate/ Code No. NA	Sample Type

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
11:06	0	0	150	21.57	--	7.24	0.85	113	0.43	15.4	78.6	--	--
11:11	5	5	150	21.57	--	7.1	0.85	12.1	0.02	14.7	0.85	--	--
11:16	5	10	150	21.57	--	7.15	0.85	8.89	0.02	14.5	31.7	--	--
11:21	5	15	150	21.57	--	7.2	0.83	5.84	0.02	14.5	19.3	--	--
11:26	5	20	150	21.57	--	7.24	0.82	4.11	0.02	15.2	9	--	--
11:31	5	25	150	21.57	--	7.24	0.81	4.52	0.02	14.9	1.4	--	--
11:36	5	30	150	21.57	--	7.25	0.8	4.32	0.02	14.8	-5	--	--
11:41	5	35	150	21.57	--	7.26	0.79	3.59	0.02	14.8	-6.3		None

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	30112891	Well ID	MWOS-08	Date	09/23/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	46.0 degrees F and Mostly 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)	26.02	Total Depth (ft-bmp)	28.83	Water Column (ft)	2.81
Purge Start	09:57	Pump Intake (ft-bmp)	27.5	Purge Method	Low-Flow
Purge End	10:37	Volumes Purged		Sample ID	MWOS-08_GW-092322
Sample Time	10:35	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.46
				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
09:59	0	0	150	26.04	--	7.02	0.95	1.34	5.99	14.3	141.9	--	--
10:04	5	5	150	26.04	--	7.02	0.86	0.99	5.27	14.3	115.2	--	--
10:09	5	10	150	26.04	--	7.02	0.85	0.91	5.09	14.2	111.5	--	--
10:14	5	15	150	26.04	--	7.01	0.83	0.4	4.9	14.3	111.5	--	--
10:19	5	20	150	26.04	--	7.01	0.83	0.32	5.02	14.5	111.5	--	--
10:24	5	25	150	26.04	--	7.02	0.82	0.32	4.57	14.4	112.1	--	--
10:29	5	30	150	26.04	--	7.01	0.82	0.3	4.66	14.4	113.3	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: In grass	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: 2035

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	30112891	Well ID	MWOS-09R	Date	09/23/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	51.1 degrees F and Mostly Clear. The wind is blowing N/NW at 9.2 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	27.25	Total Depth (ft-bmp)	32.22	Water Column (ft)	4.97
Purge Start	10:51	Pump Intake (ft-bmp)	30.5	Purge Method	Low-Flow
Purge End	11:32	Volumes Purged		Sample ID	MWOS-09R
Sample Time	11:30	Gallons Purged		Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.81
				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
10:53	0	0	150	27.25	--	7.99	1.04	2.3	2.12	14.8	124.4	--	--
10:58	5	5	150	27.25	--	7.07	0.91	2.27	0.69	14.7	118.1	--	--
11:03	5	10	150	27.25	--	7.02	0.83	2.38	0.54	14.7	114.1	--	--
11:08	5	15	150	27.25	--	7.03	0.81	2.08	0.41	14.8	112.4	--	--
11:13	5	20	150	27.25	--	7.04	0.78	2.29	0.38	14.9	113.4	--	--
11:18	5	25	150	27.25	--	7.08	0.79	1.15	0.36	15.1	112	--	--
11:23	5	30	150	27.25	--	7.08	0.79	1.04	0.35	15.2	112.3	Brown	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: In 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	30112891	Well ID	MWOS-10	Date	09/23/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	54.0 degrees F and Mostly Clear. The wind is blowing N at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	28.43	Total Depth (ft-bmp)	32.79	Water Column (ft)	4.36
Purge Start	11:50	Pump Intake (ft-bmp)	30.8	Purge Method	Low-Flow
Purge End	12:45	Volumes Purged	2.82	Sample ID	MWOS-10
Sample Time	12:35	Gallons Purged	2.00	Replicate/ Code No.	MWOS-10_GW-092322
				Well Casing Material	PVC
				Gallons in Well	0.71
				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
11:52	0	0	150	28.47	--	7.19	0.98	70	2	14.7	122.4	--	--
11:57	5	5	150	28.48	--	7.14	0.97	116	1.57	14.5	119.4	--	--
12:02	5	10	150	28.48	--	7.11	0.97	91.4	1.58	14.7	116.8	--	--
12:07	5	15	150	28.48	--	7.11	0.97	16.3	1.52	14.4	113.2	--	--
12:12	5	20	150	28.48	--	7.1	0.97	10.5	1.28	14.6	111.2	--	--
12:17	5	25	150	28.48	--	7.11	0.97	7.64	1.37	14.7	109.7	--	--
12:22	5	30	150	28.48	--	7.12	0.97	4.7	1.26	14.4	106.9	--	--
12:27	5	35	150	28.48	--	7.11	0.97	4.72	1.33	14.3	105.9	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: In 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	30112891	Well ID	TW-12-22		Date	09/22/2022	
Project Name/Location	RACER PNC/Pontiac		Weather(°F)	55.0 degrees F and Mostly Cloudy. The wind is blowing N/NW at 15.0 mph.			
Measuring Pt. Description	Top of Inner Casing	MP Elevation			Casing Diameter (in)	Well Casing Material NA	
Static Water Level (ft-bmp)	22.82	Total Depth (ft-bmp)	32.68	Water Column (ft)	9.86	Gallons in Well	
Purge Start	13:07	Pump Intake (ft-bmp)	27	Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	13:41	Volumes Purged			Sample ID	TW-12-22_GW-092222	
Sample Time	13:39	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
13:07	0	0	200	22.82	--	7.48	0.46	76.9	8.38	15.7	53.8	--	--
13:12	5	5	200	22.82	--	7.4	0.536	20.3	2.87	15.2	47.4	--	--
13:17	5	10	200	22.82	--	7.41	0.539	10.4	2.46	15	42.7	--	--
13:22	5	15	200	22.82	--	7.39	0.538	4.5	2.43	15	28.9	--	--
13:27	5	20	200	22.82	--	7.39	0.538	4.25	2.5	15	28.7	--	--
13:32	5	25	200	22.82	--	7.39	0.538	3.32	2.4	15.1	27.5	--	--
13:37	5	30	200	22.82	--	7.42	0.542	2.87	2.4	15.2	28.4	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: Well was filled with water. Used periplastic pump to remove water.

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	30112891	Well ID	Unknown-01	Date	09/20/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	55.4 degrees F and Mostly Clear. The wind is blowing west at 3 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	Well Casing Material NA
Static Water Level (ft-bmp)	18.68	Total Depth (ft-bmp)	24.08	Water Column (ft) 5.4	Gallons in Well
Purge Start		Pump Intake (ft-bmp)		Purge Method Low-Flow	Purge Equipment Peristaltic
Purge End		Volumes Purged		Sample ID NA	Sampled by Sommer Guy
Sample Time 09:30		Gallons Purged		Replicate/ Code No. NA	Sample Type

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
08:58	0	0	150	18.78	--	7.12	1.5	0.19	2.7	15	152.4	--	--
09:03	5	5	150	18.78	--	6.99	1.39	0.02	1.96	14.7	151.7	--	--
09:08	5	10	150	18.78	--	7.03	1.36	0.02	1.61	14.8	147.2	--	--
09:13	5	15	150	18.78	--	7.04	1.36	0.18	1.64	14.8	144.4	--	--
09:18	5	20	150	18.78	--	7.05	1.35	0.26	1.6	14.6	142.7	--	--
09:23	5	25	150	18.78	--	7.05	1.34	0.38	1.59	14.6	141.3	--	--
09:28	5	30	150	18.78	--	7.06	1.32	0.02	1.59	14.7	140.1		None

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	30112891	Well ID	MWF16-23	Date	09/20/2022
Project Name/Location	RACER PNC	Weather(°F)	72.0 degrees F and Light Rain. The wind is blowing at 4.7 mph.		
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	23.89	Total Depth (ft-bmp)	30.46	Water Column (ft)	6.57
Purge Start	14:01	Pump Intake (ft-bmp)	28	Purge Method	Low-Flow
Purge End	15:00	Volumes Purged	1.87	Sample ID	MWF16-23_GW-092022
Sample Time	14:55	Gallons Purged	2.00	Replicate/ Code No.	DUP-06_GW-092022
				Well Casing Material	PVC
				Gallons in Well	1.07
				Purge Equipment	Peristaltic
				Sampled by	Christina Weaver
				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
14:03	0	0	200	23.91	--	7.32	0.94	108	7.98	15.3	84.3	--	--
14:08	5	5	200	23.91	--	7.33	0.83	57.8	4.53	15.2	73.1	--	--
14:13	5	10	200	23.91	--	7.3	0.82	40.3	3.87	15.3	63.8	--	--
14:18	5	15	200	23.91	--	7.28	0.82	36.7	3.15	15.5	57.6	--	--
14:23	5	20	200	23.91	--	7.25	0.82	14.8	3.32	15.5	40.3	--	--
14:28	5	25	200	23.91	--	7.25	0.82	3.35	3.3	15.5	39.7	--	--
14:33	5	30	200	23.91	--	7.25	0.81	2.55	3.28	15.5	35.3	--	--
14:48	15	45	200	23.91	--	7.25	0.81	2.45	3.27	15.5	33.6	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: Driveway	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Flush mount	Key Number To Well: 2035

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	30112891	Well ID	MW-09-22	Date	12/01/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	27.0 degrees F and Cloudy. The wind is blowing W at 16.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.70	Total Depth (ft-bmp)	32.82	Water Column (ft)	11.12
Purge Start	10:18	Pump Intake (ft-bmp)	31.5	Purge Method	Low-Flow
Purge End	11:13	Volumes Purged	0.41	Sample ID	MW-09-22_GW-120122
Sample Time	11:06	Gallons Purged	0.75	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.81
				Purge Equipment	Submersible
				Sampled by	Gary Schafer
				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
10:20	0	0	125	21.70	--	7.4	0.663	74	1.35	11.9	269	--	--
10:25	5	5	125	21.70	--	7.42	0.661	64	1.32	11.5	264.3	--	--
10:30	5	10	125	21.70	--	7.44	0.653	55.3	0.14	11.3	260.8	--	--
10:35	5	15	125	21.70	--	7.41	0.65	50	0.04	11.2	261.3	--	--
10:40	5	20	125	21.70	--	7.36	0.642	35.1	0.05	11	259.9	--	--
10:45	5	25	125	21.70	--	7.36	0.641	28.6	0.06	11.1	259.5	--	--
10:50	5	30	125	21.70	--	7.36	0.64	18.3	0.04	11.1	259.8	--	--
10:55	5	35	125	21.70	--	7.36	0.639	10.2	0.05	11.1	260	--	--
11:00	5	40	125	21.70	--	7.35	0.655	9.12	0.05	11.1	262.4	--	--
11:05	5	45	125	21.70	--	7.35	0.65	8.34	0.05	10.9	260.2	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:	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	30112891	Well ID	MW-13-22	Date	11/28/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	Overcast temp 40	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.59	Total Depth (ft-bmp)	26.72	Water Column (ft)	4.13
Purge Start	13:48	Pump Intake (ft-bmp)	25.6	Purge Method	Low-Flow
Purge End	14:30	Volumes Purged	0.75	Sample ID	MW-13-22_GW-112822
Sample Time	14:21	Gallons Purged	0.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.67
				Purge Equipment	Submersible
				Sampled by	Gary Schafer
				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
13:50	0	0	125	22.66	--	6.46	0.92	8.28	1.08	13.4	-51.4	--	--
13:55	5	5	125	22.67	--	6.52	0.91	5.97	0.69	13.4	-60.3	--	--
14:00	5	10	125	22.67	--	6.55	0.91	4.79	0.67	13.6	-64.2	--	--
14:05	5	15	125	22.67	--	6.58	0.91	3.77	0.62	13.4	-66.9	--	--
14:10	5	20	125	22.67	--	6.59	0.91	2.5	0.59	13.4	-69.2	--	--
14:15	5	25	125	22.67	--	6.59	0.91	1.76	0.61	13.4	-68.7	--	--
14:20	5	30	125	22.67	--	6.6	0.91	1.62	0.62	13.5	-70	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: Feiro area	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	30112891	Well ID	MW-14-22	Date	11/28/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	Overcast temp 40	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Well Casing Material	PVC				
Static Water Level (ft-bmp)	22.90	Total Depth (ft-bmp)	34.64	Water Column (ft)	11.74
Gallons in Well	1.91				
Purge Start	14:47	Pump Intake (ft-bmp)	33.5	Purge Method	Low-Flow
Purge Equipment	Submersible				
Purge End	15:53	Volumes Purged	0.52	Sample ID	MW-14-22_GW-112822
Sampled by	Gary Schafer				
Sample Time	15:46	Gallons Purged	1.00	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
14:50	0	0	125	22.90	--	7.32	0.7	49.9	1.21	12.5	112.8	--	--
14:55	5	5	125	22.90	--	7.34	0.7	31.9	0.87	12.7	109.2	--	--
15:00	5	10	125	22.90	--	7.33	0.7	17.8	0.84	12.6	112.5	--	--
15:05	5	15	125	22.90	--	7.33	0.7	9.3	0.73	12.6	115.8	--	--
15:10	5	20	125	22.90	--	7.29	0.7	9.71	0.77	12.5	124.2	--	--
15:15	5	25	125	22.90	--	7.28	0.7	6.96	0.78	12.5	129.5	--	--
15:20	5	30	125	22.90	--	7.3	0.7	6.87	0.75	12.5	134	--	--
15:25	5	35	125	22.90	--	7.3	0.7	5.86	0.74	12.5	139.2	--	--
15:30	5	40	125	22.90	--	7.29	0.7	5.28	0.73	12.5	143.1	--	--
15:35	5	45	125	22.90	--	7.3	0.7	4.15	0.72	12.5	146.5	--	--
15:40	5	50	125	22.90	--	7.3	0.7	4.08	0.72	12.5	149	--	--
15:45	5	55	125	22.90	--	7.3	0.7	4.12	0.72	12.5	153.1	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: South Feiro area	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	30112891	Well ID	MW-15-22	Date	11/29/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	39.9 degrees F and Cloudy. The wind is blowing SE at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	23.02	Total Depth (ft-bmp)	35.92	Water Column (ft)	12.9
Purge Start	08:53	Pump Intake (ft-bmp)	34.5	Purge Method	Low-Flow
Purge End	09:44	Volumes Purged	0.36	Sample ID	MW-15-22_GW-112922
Sample Time	09:31	Gallons Purged	0.75	Replicate/ Code No.	DUP-03_GW-112922
				Well Casing Material	PVC
				Gallons in Well	2.1
				Purge Equipment	Submersible
				Sampled by	Gary Schafer
				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
08:55	0	0	125	23.02	--	7.11	0.85	6.43	0.96	12.8	-57.8	--	--
09:00	5	5	125	23.02	--	7.11	0.75	4.71	0.84	12.8	-67.8	--	--
09:05	5	10	125	23.02	--	7.09	0.75	3.46	0.73	13	-74.8	--	--
09:10	5	15	125	23.02	--	7.07	0.76	2.16	0.73	13.1	-77.8	--	--
09:15	5	20	125	23.02	--	7.05	0.76	1.68	0.73	13.1	-80.5	--	--
09:20	5	25	125	23.02	--	7.04	0.76	1.84	0.81	13	-81.1	--	--
09:25	5	30	125	23.02	--	7.04	0.76	1.58	0.78	13	-81.3	--	--
09:30	5	35	125	23.02	--	7.05	0.76	1	0.79	13	-81.1	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:	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	30112891	Well ID	MW-16-22	Date	11/29/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	43.0 degrees F and Fog/Mist. The wind is blowing SE at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	22.94	Total Depth (ft-bmp)	30.5	Water Column (ft)	7.56
Purge Start	11:03	Pump Intake (ft-bmp)	29.5	Purge Method	Low-Flow
Purge End	11:42	Volumes Purged	0.61	Sample ID	MW-16-22_GW-112922
Sample Time	11:36	Gallons Purged	0.75	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.23
				Purge Equipment	Submersible
				Sampled by	Gary Schafer
				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
11:05	0	0	125	22.95	--	7.29	0.613	7.86	2.08	13.2	213.7	--	--
11:10	5	5	125	22.95	--	7.27	0.622	7.32	2.04	13.3	213.7	--	--
11:15	5	10	125	22.95	--	7.29	0.634	9.24	2.01	13.5	207.5	--	--
11:20	5	15	125	22.95	--	7.29	0.65	8.1	1.92	13.4	204.3	--	--
11:25	5	20	125	22.95	--	7.29	0.65	7.73	1.9	13.4	205.3	--	--
11:30	5	25	125	22.95	--	7.3	0.65	7.77	1.89	13.5	201.7	--	--
11:35	5	30	125	22.95	--	7.29	0.65	7.58	1.79	13.5	201.3	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:	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	30112891	Well ID	MWF16-05	Date	11/29/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	43.0 degrees F and Fog/Mist. The wind is blowing S/SE at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	20.77	Total Depth (ft-bmp)	22.74	Water Column (ft)	1.97
Purge Start	12:57	Pump Intake (ft-bmp)	21.5	Purge Method	Low-Flow
Purge End	14:10	Volumes Purged	4.69	Sample ID	MWF16-05_GW-112922
Sample Time	14:01	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.32
				Purge Equipment	Submersible
				Sampled by	Gary Schafer
				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
13:00	0	0	125	20.80	--	7.25	1.36	358	4.47	13.5	226.3	--	--
13:05	5	5	125	20.80	--	7.22	1.44	280	1.32	13.4	232.9	--	--
13:10	5	10	125	20.80	--	7.26	1.45		4.51	13.4	235.5	--	--
13:15	5	15	125	20.80	--	7.3	1.44	92.8	4.5	13.4	236.8	--	--
13:20	5	20	125	20.80	--	7.32	1.43	39.6	4.43	13.4	239.3	--	--
13:25	5	25	125	20.80	--	7.34	1.42	23.2	4.36	13.4	240.5	--	--
13:30	5	30	125	20.80	--	7.35	1.4	15	4.04	13.4	241.4	--	--
13:35	5	35	125	20.80	--	7.36	1.4	12.5	3.97	13.4	242.4	--	--
13:40	5	40	125	20.80	--	7.36	1.38	10.4	3.9	13.4	242.3	--	--
13:45	5	45	125	20.80	--	7.37	1.36	6.46	3.76	13.5	244.6	--	--
13:50	5	50	125	20.80	--	7.37	1.36	6.31	3.74	13.5	244.8	--	--
13:55	5	55	125	20.80	--	7.37	1.32	5.35	3.72	13.4	247	--	--
14:00	5	60	125	20.80	--	7.37	1.36	4.83	3.73	13.4	248.2	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:	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	30112891	Well ID	MWF16-06	Date	11/29/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	46.9 degrees F and Cloudy. The wind is blowing S/SE at 11.4 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	16.08	Total Depth (ft-bmp)	28.64	Water Column (ft)	12.56
Purge Start	14:28	Pump Intake (ft-bmp)	27	Purge Method	Low-Flow
Purge End	15:09	Volumes Purged	0.25	Sample ID	MWF16-06_GW-112922
Sample Time	15:01	Gallons Purged	0.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	2.04
				Purge Equipment	Submersible
				Sampled by	Gary Schafer
				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
14:30	0	0	125	16.15	--	7.64	0.454	2.9	4.36	13.4	259.6	--	--
14:35	5	5	125	16.15	--	7.62	0.457	1.56	3.97	13.8	261.9	--	--
14:40	5	10	125	16.26	--	7.64	0.482	0.55	3.26	13.8	263.1	--	--
14:45	5	15	125	16.28	--	7.66	0.488	0.33	3.17	13.9	262.9	--	--
14:50	5	20	125	16.28	--	7.66	0.492	0.32	3.01	13.9	263.5	--	--
14:55	5	25	125	16.28	--	7.66	0.495	0.19	3.05	13.9	265.2	--	--
15:00	5	30	125	16.28	--	7.68	0.495	0.14	2.95	13.9	264.7	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:	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	30112891	Well ID	MWF16-16	Date	12/05/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	30.0 degrees F and Mostly Cloudy. The wind is blowing S at 6.9 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	23.02	Total Depth (ft-bmp)	31.24	Water Column (ft)	8.22
Purge Start	11:38	Pump Intake (ft-bmp)	30	Purge Method	Low-Flow
Purge End	12:29	Volumes Purged	0.56	Sample ID	MWF16-16_GW-120522
Sample Time	12:21	Gallons Purged	0.75	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.34
				Purge Equipment	Submersible
				Sampled by	Gary Schafer
				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	23.02	--	7.36	0.81	12.6	0.3	12.4	186.2	--	--
11:45	5	5	125	23.02	--	7.29	0.79	14.2	0.62	12.7	181.8	--	--
11:50	5	10	125	23.02	--	7.31	0.76	7.13	0.04	12.7	176	--	--
11:55	5	15	125	23.02	--	7.35	0.72	5.55	0.06	12.7	167.2	--	--
12:00	5	20	125	23.02	--	7.38	0.71	4.57	0.05	12.6	163.7	--	--
12:05	5	25	125	23.02	--	7.36	0.7	4.89	0.06	12.7	162.8	--	--
12:10	5	30	125	23.02	--	7.36	0.69	3.47	0.16	12.7	160	--	--
12:15	5	35	125	23.02	--	7.39	0.67	3.16	0.17	12.7	157.4	--	--
12:20	5	40	125	23.02	--	7.37	0.66	3.4	0.18	12.6	156.3	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:	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	30112891	Well ID	MWF16-18	Date	12/01/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	28.0 degrees F and Mostly Cloudy. The wind is blowing W at 15.0 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	21.53	Total Depth (ft-bmp)	31.49	Water Column (ft)	9.96
Purge Start	11:28	Pump Intake (ft-bmp)	30.5	Purge Method	Low-Flow
Purge End	12:18	Volumes Purged	0.46	Sample ID	MWF16-18_GW-120122
Sample Time	12:11	Gallons Purged	0.75	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.62
				Purge Equipment	Submersible
				Sampled by	Gary Schafer
				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	125	21.54	--	7.04	0.85	5.82	0.62	12.5	286	--	--
11:35	5	5	125	21.54	--	7.02	0.85	2.56	0.4	12.6	283.3	--	--
11:40	5	10	125	21.54	--	7.04	0.85	3.06	0.33	12.7	281	--	--
11:45	5	15	125	21.54	--	7.05	0.85	0.93	0.41	13.1	267.5	--	--
11:50	5	20	125	21.54	--	7.05	0.85	0.89	0.41	13.2	267.1	--	--
11:55	5	25	125	21.54	--	7.06	0.85	2	0.45	13	263	--	--
12:00	5	30	125	21.54	--	7.02	0.85	1.38	0.77	12.8	260.6	--	--
12:05	5	35	125	21.54	--	7.03	0.85	1.25	0.78	12.9	255.2	--	--
12:10	5	40	125	21.54	--	7.03	0.85	1.19	0.8	12.8	255.5	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:	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	30112891	Well ID	MWF16-22	Date	12/01/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	30.9 degrees F and Partly Cloudy. The wind is blowing W/NW at 10.3 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
Static Water Level (ft-bmp)	23.77	Total Depth (ft-bmp)	33.9	Water Column (ft)	10.13
Purge Start	12:37	Pump Intake (ft-bmp)	32	Purge Method	Low-Flow
Purge End	13:29	Volumes Purged	0.30	Sample ID	MWF16-22_GW-120122
Sample Time	13:21	Gallons Purged	0.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	1.65
				Purge Equipment	Submersible
				Sampled by	Gary Schafer
				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
12:40	0	0	125	23.78	--	7.27	0.66	7.75	0.61	14.7	247.3	--	--
12:45	5	5	125	23.78	--	7.23	0.66	4.14	0.53	14.6	248.2	--	--
12:50	5	10	125	23.78	--	7.22	0.65	4.24	0.53	14.3	247.3	--	--
12:55	5	15	125	23.78	--	7.23	0.65	3.06	0.5	14.3	243.5	--	--
13:00	5	20	125	23.78	--	7.24	0.65	2.93	0.51	14.3	240.4	--	--
13:05	5	25	125	23.78	--	7.25	0.64	1.91	0.61	14.1	239.1	--	--
13:10	5	30	125	23.78	--	7.24	0.63	2.7	0.65	14.3	242.1	--	--
13:15	5	35	125	23.78	--	7.26	0.623	1.1	0.64	14.1	242.5	--	--
13:20	5	40	125	23.78	--	7.25	0.623	2	0.6	14.1	246.6	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: _____	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	30112891	Well ID	TW-12-22	Date	12/05/2022
Project Name/Location	RACER Pontiac North Campus 2022		Weather(°F)	27.0 degrees F and Mostly Cloudy. The wind is blowing S at 5.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	1
Static Water Level (ft-bmp)	23.33	Total Depth (ft-bmp)	32.68	Water Column (ft)	9.35
Purge Start	09:37	Pump Intake (ft-bmp)	31.5	Purge Method	Low-Flow
Purge End	10:58	Volumes Purged	3.95	Sample ID	TW-12-22_GW-120522
Sample Time	10:51	Gallons Purged	1.50	Replicate/ Code No.	NA
				Well Casing Material	PVC
				Gallons in Well	0.38
				Purge Equipment	Submersible
				Sampled by	Gary Schafer
				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
09:40	0	0	125	23.33	--	7.55	0.554	388	0.29	12.5	-186.9	--	--
09:45	5	5	125	23.33	--	7.51	0.554	301	0.34	12.8	-198.7	--	--
09:50	5	10	125	23.35	--	7.43	0.549	189	0.47	12.9	-184.7	--	--
09:55	5	15	125	23.35	--	7.38	0.554	100	0.42	12.6	-181.3	--	--
10:00	5	20	125	23.35	--	7.37	0.555	83	0.1	12.5	-177.4	--	--
10:05	5	25	125	23.35	--	7.45	0.557	70.5	0.45	12.1	-172.7	--	--
10:10	5	30	125	23.35	--	7.47	0.554	58.3	0.82	12.8	-172.1	--	--
10:15	5	35	125	23.35	--	7.45	0.557	45.2	0.49	12.6	-175.7	--	--
10:20	5	40	125	23.35	--	7.47	0.557	28.5	0.42	12.6	-167.4	--	--
10:25	5	45	125	23.35	--	7.44	0.559	20.1	0.8	12.6	-167.1	--	--
10:30	5	50	125	23.35	--	7.43	0.559	18.6	0.81	12.6	-170.7	--	--
10:35	5	55	125	23.35	--	7.43	0.561	21.7	0.8	12.7	-175.8	--	--
10:40	5	60	125	23.35	--	7.43	0.56	18.3	0.79	12.7	-168.3	--	--
10:45	5	65	125	23.35	--	7.43	0.555	11.2	0.79	12.7	-165.2	--	--
10:50	5	70	125	23.35	--	7.43	0.556	9.8	0.78	12.7	-167.2	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: _____	Well Locked at Arrival: ☒ yes
Condition of Well: ☒ Good condition	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: 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 28550 Cabot Drive #500									Project Name: RACER PNC						
Field Manager: Christina Weaver									Project Number: 30112891						
Phone: 248-832-0008		Special Instructions: See COC							Site Address: 200 East Montcalm street Pontiac Michigan US						
Email Address for Result Reporting:									Sampler Name: Christina Weaver				Phone Number:248-832-0008		
Lexi.Crisp@Arcadis.com									Email:Lexi.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-032222	Parent: SV-02-21_SG-032222	03/22/2022	Pass	0	53.8	Pass	350	100	LC1134	24256	11:36	-29	11:42	-6	NA
SV-02-21_SG-032222	Onsite	03/22/2022	Pass	0	53.8	Pass	350	100	1L1504	23387	11:36	-28	11:42	-5	NA
SV-04-21_SG-032222	Sidewalk	03/22/2022	Pass	0	48.3	Pass	408	100	1L1560	23211	09:55	-28	10:02	-5	NA
SV-06-21_SG-032222	In front of burnt house	03/22/2022	Pass	0	50.1	Pass	400	100	1L2239	23203	09:31	-28	09:37	-5	NA
SV-01-21_SG-032222	Onsite closest to drive	03/22/2022	Pass	0	53.2	Pass	250	100	1L1864	24719	11:09	-29	11:16	-5	NA
SV-05-21_SG-032222	In front of burnt house	03/22/2022	Pass	0	43.8	Pass	250	100	SLC015	24299	10:16	-29	10:22	-5	NA
SV-03-21_SG-032222	Sidewalk in front of 817	03/22/2022	Pass	0	48.1	Pass	250	100	1L3138	23228	10:35	-28	10:42	-5	NA

Meteorological Data						General Notes or Observations	
Date	Time	Temp		Relative Humidity (%)	Barometric Pressure (in.Hg)	Weather source	
		Indoor	Outdoor				
03/22/2022	09:53		35	64	30.24	3.3 wmoUnit:degC and Cloudy. The wind is blowing undefined at 20.52 wmoUnit:km_h-1.	NA

Air Parameters (completed after sample collection)						
Location ID	CH4 %	CH4 LEL %	O2 %	PID (ppm)	Differential Pressure (in. Water Column)	
--	0	0	15.7	NM	NM	
SV-02-21	0	0	15.7	NM	NM	
SV-04-21_SG-032222	0	0	13.6	NM	NM	
SV-06-21	0	0	16.3	NM	NM	
SV-01-21_SG-032222	0	0	15.8	NM	NM	
SV-05-21	1.5	30	13.2	NM	NM	



Soil Vapor Collection Log Sheet

SV-03-21	0	0	14.6	NM	NM



Soil Vapor Collection Log Sheet

Office Name & Address (Reporting Information): Novi 28550 Cabot Drive									Project Name: RACER Pontiac North Campus 2022							
Field Manager: Christina Weaver									Project Number: 30112891							
Phone: 248-832-0008		Special Instructions: Analyze for 1,1-DCE; cis-1,2-DCE;trans-1,2-DCeE; PCE; TCE; Vinyl Chloride							Site Address: Pontiac Michigan US							
Email Address for Result Reporting:									Sampler Name: Christina Weaver				Phone Number:248-832-0008			
Lexi.Crisp@Arcadis.com									Email:Lexi.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-05-21_060822	In front of burnt house	06/08/2022	Pass	0	42.7	Pass	200	100	1L2465	23806	10:38	-28	10:44	-5	NA	
SV-03-21_060822	In front of 817	06/08/2022	Pass	0	48.7	Pass	200	100	1L2252	24923	10:56	-28	11:03	-5	NA	
SV-06-21_060822	In front of burnt house	06/08/2022	Pass	0	46.7	Pass	350	100	1L2636	23961	09:55	-28	10:03	-5	NA	
SV-04-21_060822	In front of 817	06/08/2022	Pass	0	40.3	Pass	350	100	1L1627	23369	10:17	-28	10:23	-5	NA	
SV-01-21_060822	On curb closest to MW-08-21	06/08/2022	Pass	0	44.9	Pass	250	100	1L2574	23198	09:20	-28	09:26	-5	NA	
SV-02-21_SG-060822	Curb further from MW-08-21	06/08/2022	Pass	0	42.8	Pass	350	100	1L3536	24296	11:21	-28	11:28	-5	NA	

Meteorological Data						General Notes or Observations	
Date	Time	Temp		Relative Humidity (%)	Barometric Pressure (in.Hg)	Weather source	
		Indoor	Outdoor				
06/08/2022	09:53		65	54	29.95	17.2 wmoUnit:degC and Partly Cloudy. The wind is blowing at 5.4 wmoUnit:km_h-1.	NA

Air Parameters (completed after sample collection)						
Location ID	CH4 %	CH4 LEL %	O2 %	PID (ppm)	Differential Pressure (in. Water Column)	
SV-05-21	0	NM	11.6	NM	NM	
SV-03-21	0	NM	13.1	NM	NM	
SV-06-21	0	NM	12.3	NM	NM	
SV-04-21	0	NM	11.4	NM	NM	
SV-01-21	0	NM	15.2	NM	NM	
SV-02-21	0	NM	15.1	NM	NM	



Soil Vapor Collection Log Sheet

Office Name & Address (Reporting Information): Novi 28550 Cabot Drive # 500										Project Name: RACER Pontiac North Campus 2022						
Field Manager: Christina Weaver										Project Number: 30112891						
Phone: 248-832-0008			Special Instructions: See COC							Site Address: Pontiac Michigan						
Email Address for Result Reporting: Lexi.Crisp@arcadis.com										Sampler Name: Christina Weaver				Phone Number:248-832-0008		
										Email:Lexi.Crisp@arcadis.com						
Helium Detector Used: MGD-2002					Helium Leak Method: Helium Tracer Test					Summa Canister Size (1L, 2.7 L, 6L): 6 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-05-21_SG-092222	Sidewalk inside fence	09/22/2022	Pass	0	48.2	Pass	200	100	1L3665	24848	14:14	-28	14:26	-5.5	NA	
SV-03-21_SG-092222	Sidewalk in front of 817 St.Claire	09/22/2022	Pass	0	42.6	Pass	200	100	1L3055	23140	14:36	-29	14:48	-5.5	NA	
SV-02-21_SG-092222	Driveway SE of SV-01 and MW-08-21	09/22/2022	Pass	0	42.3	Pass	350	100	1L3785	23210	12:42	-28	12:54	-5.5	NA	
SV-06-21_SG-092222	Behind fenced area burnt home	09/22/2022	Pass	0	45.8	Pass	350	100	1L3854	23845	13:19	-28	13:33	-5.5	NA	
SV-01-21_SG-092222	Driveway	09/22/2022	Pass	0	48.2	Pass	250	100	1L3698	23457	15:03	-28	15:15	-6	NA	
SV-04-21_SG-092222	Sidewalk in front of house 827 St.Claire	09/22/2022	Pass	0	42.7	Pass	350	100	1L3757	24837	13:50	-28.5	14:02	-6	NA	
DUP-01_SG-092222	Parent: SV-02-21	09/22/2022	Pass	0	42.3	Pass	350	100	1L2614	23234	12:42	-28	12:54	-5	NA	

Meteorological Data							General Notes or Observations
Date	Time	Temp		Relative Humidity (%)	Barometric Pressure (in.Hg)	Weather source	
		Indoor	Outdoor				
09/22/2022	11:53		56	53	30.01	12.8 wmoUnit:degC and Mostly Cloudy. The wind is blowing undefined at 24.12 wmoUnit:km_h-1.	NA

Air Parameters (completed after sample collection)						
Location ID	CH4 %	CH4 LEL %	O2 %	PID (ppm)	Differential Pressure (in. Water Column)	
SV-05-21_SG-092222	0	NM	11.3	0	NM	
SV-03-21_SG-092222	0	NM	10.8	0	NM	



Soil Vapor Collection Log Sheet

SV-02-21_SG-092222	0	NM	15.2	0	NM
SV-06-21_SG-092222	0	NM	13.7	0	NM
SV-01-21_SG-092222	0	NM	15.3	0	NM
SV-04-21_SG-092222	0	NM	12.6	0	NM
--	0	NM	15.2	0	NM



Soil Vapor Collection Log Sheet

Office Name & Address (Reporting Information): Novi 28550 Cabot Drive Ste# 500									Project Name: RACER Pontiac North Campus 2022						
Field Manager: Christina Weaver									Project Number: 30112891						
Phone: 248-832-0008		Special Instructions: See COC							Site Address: 200 East Montcalm Pontiac Michigan US						
Email Address for Result Reporting:									Sampler Name: Christina Weaver				Phone Number:248-832-0008		
Lexi.Crisp@arcadis.com; Tiffany.Linder@Arcadis.com									Email:Lexi.Crisp@arcadis.com; Tiffany.Linder@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-06-21_SG-112822	Near demolished house Northern port	11/28/2022	Pass	0	47.8	Pass	350	100	1L3533	23780	13:00	-28	13:07	-5	Nearby burnt home recently demolished with excavation.
SV-01-21_SG-112822	Closest to MW-08-21 in grass	11/28/2022	Pass	0	40.5	Pass	250	100	1L3322	23407	12:29	-28	12:37	-3	NA
SV-03-21_SG-112822	In front of 817	11/28/2022	Pass	0	43.2	Pass	200	100	000001715	23732	14:09	-28	14:16	-5	NA
SV-05-21_SG-112822	Near demolished house. Southern location	11/28/2022	Pass	0	48.5	Pass	200	100	000001042	23929	13:50	-28	13:57	-5	NA
SV-04-21_SG-112822	In front of 817	11/28/2022	Pass	0	47.2	Fail	350	100	1L4238	24545	13:28	-28.5	13:35	-5	NA
DUP-01_SG-112822	Parent: SV-02	11/28/2022	--	--	--	--	--	--	1L3330	23802	--	-28	--	-5	NA
SV-02-21_SG-112822	In grass near driveway further from MW-08-21	11/28/2022	Pass	0	42.7	Pass	400	100	1L2231	23453	14:32	-28	14:39	-5	NA

Meteorological Data						General Notes or Observations	
Date	Time	Temp		Relative Humidity (%)	Barometric Pressure (in.Hg)	Weather source	
		Indoor	Outdoor				
11/28/2022	12:53		39	72	29.96	3.3 wmoUnit:degC and Cloudy. The wind is blowing undefined at 0 wmoUnit:km_h-1.	NA

Air Parameters (completed after sample collection)						
Location ID	CH4 %	CH4 LEL %	O2 %	PID (ppm)	Differential Pressure (in. Water Column)	
SV-06-21	0.2	NM	13.9	NM	NM	
SV-01-21	0.2	NM	15.8	NM	NM	
SV-03-21	0.1	NM	12.9	NM	NM	



Soil Vapor Collection Log Sheet

SV-05-21	0.2	NM	12.5	NM	NM
SV-04-21	0.1	NM	13	NM	NM
--	NM	NM	NM	NM	NM
SV-02-21	0.2	NM	15.6	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/m³)
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

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)
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

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)
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

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)
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

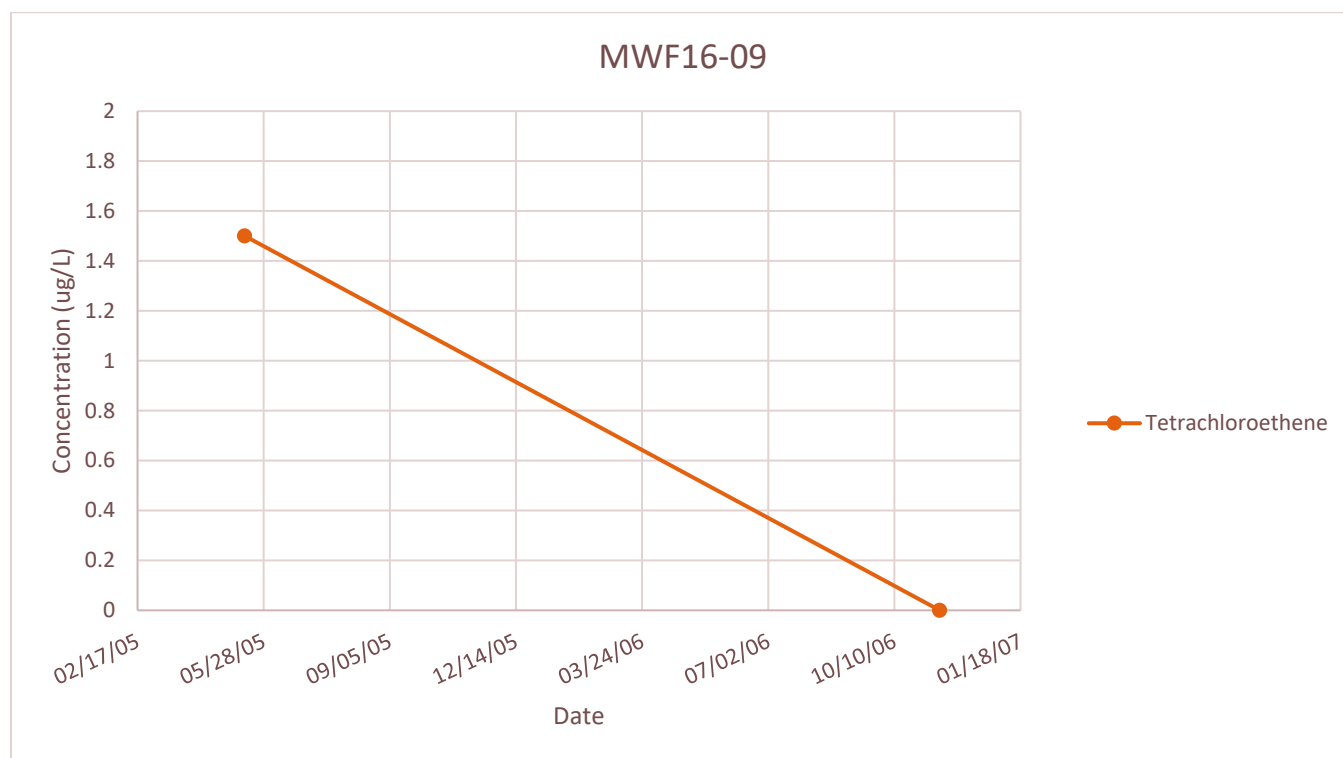
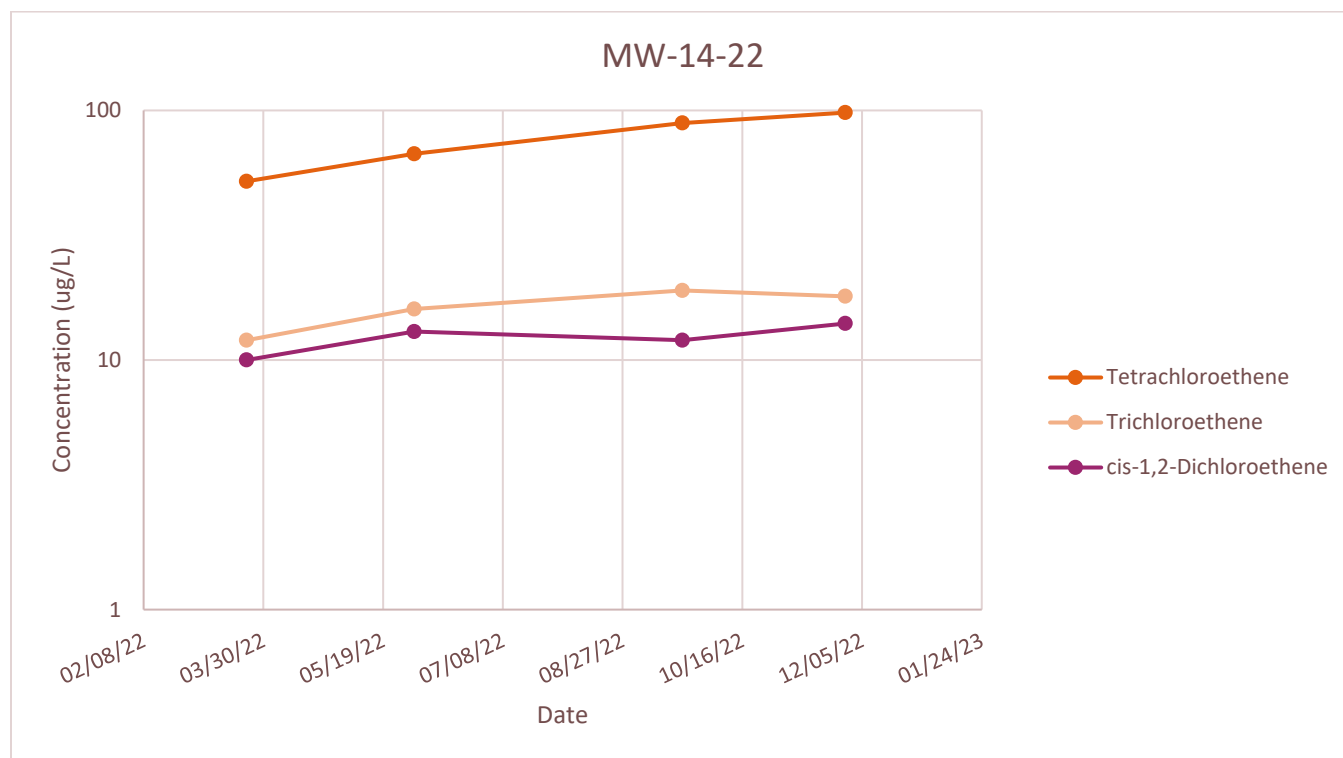
**Soil gas site-specific volatilization to indoor air (SSVIAC) are applicable for all depths.

- 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.

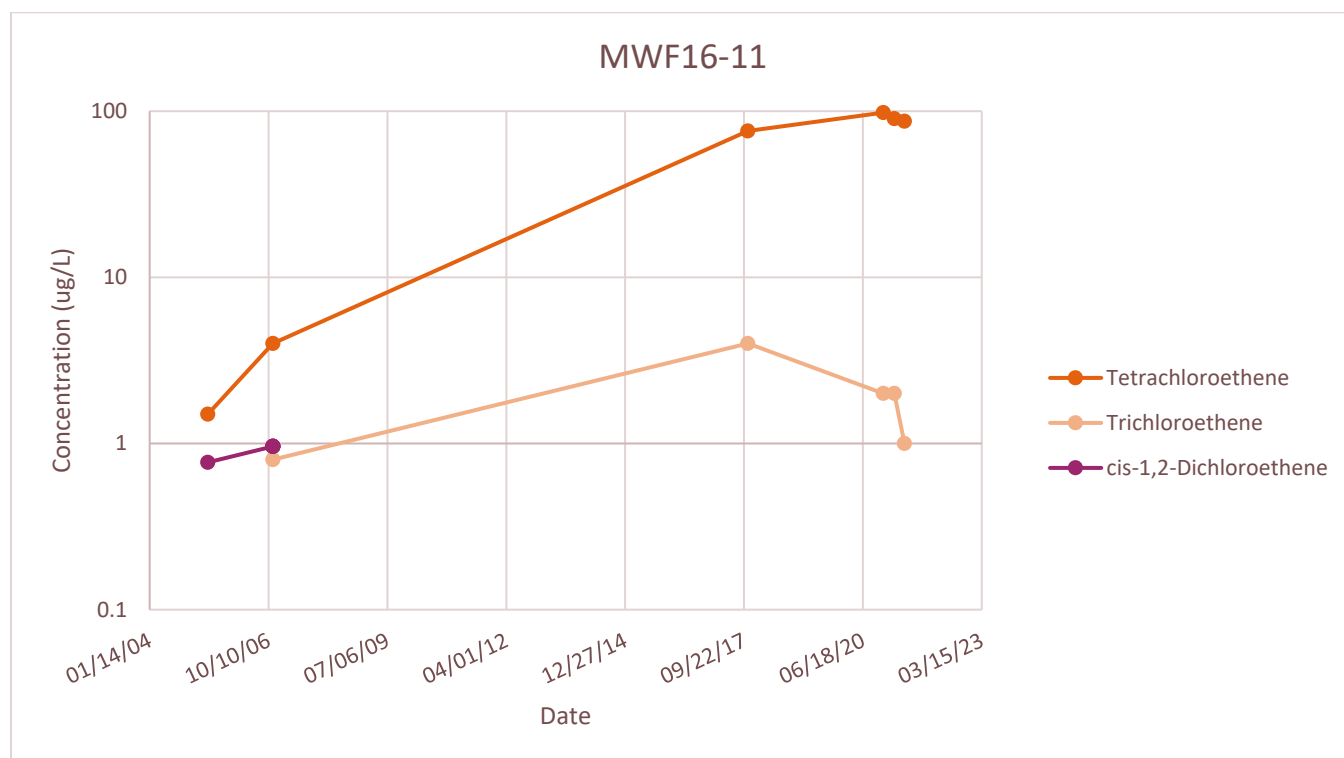
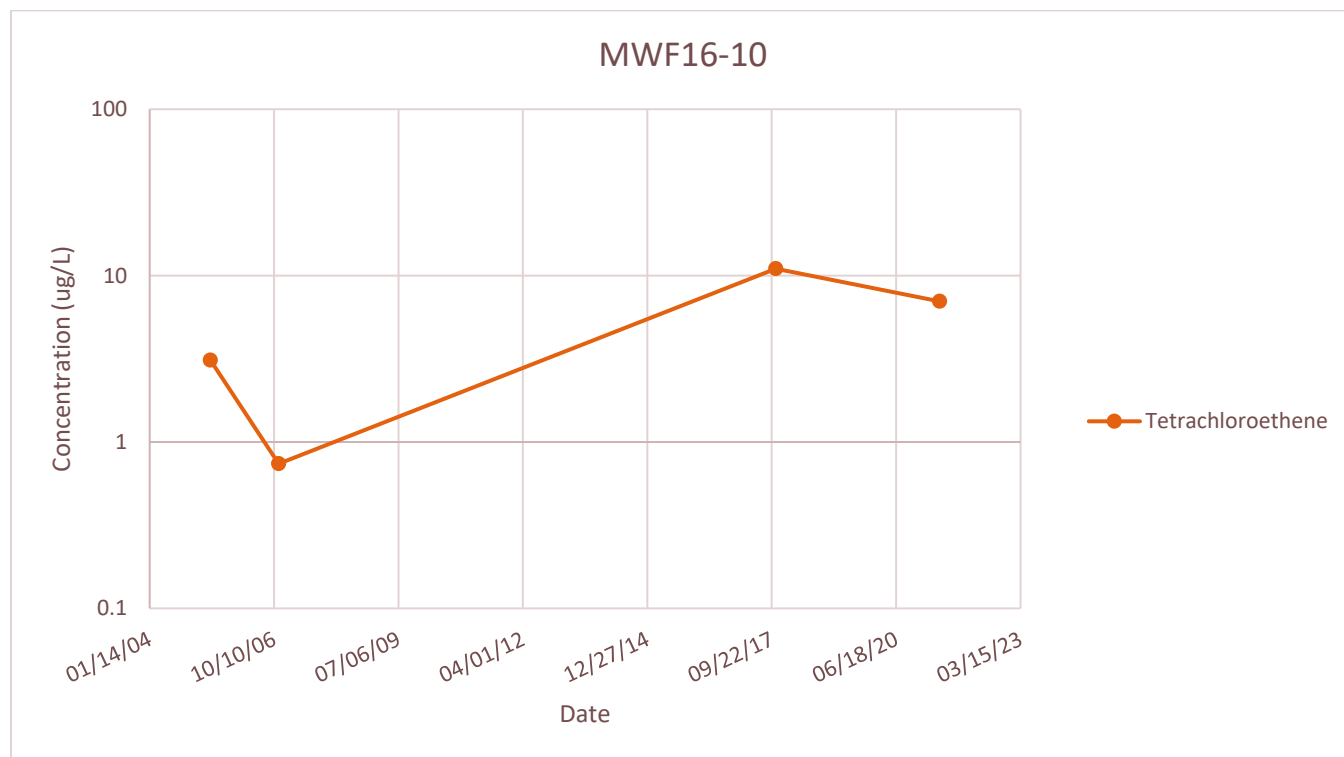
Appendix D

Mann-Kendall Calculations and Trend Graphs

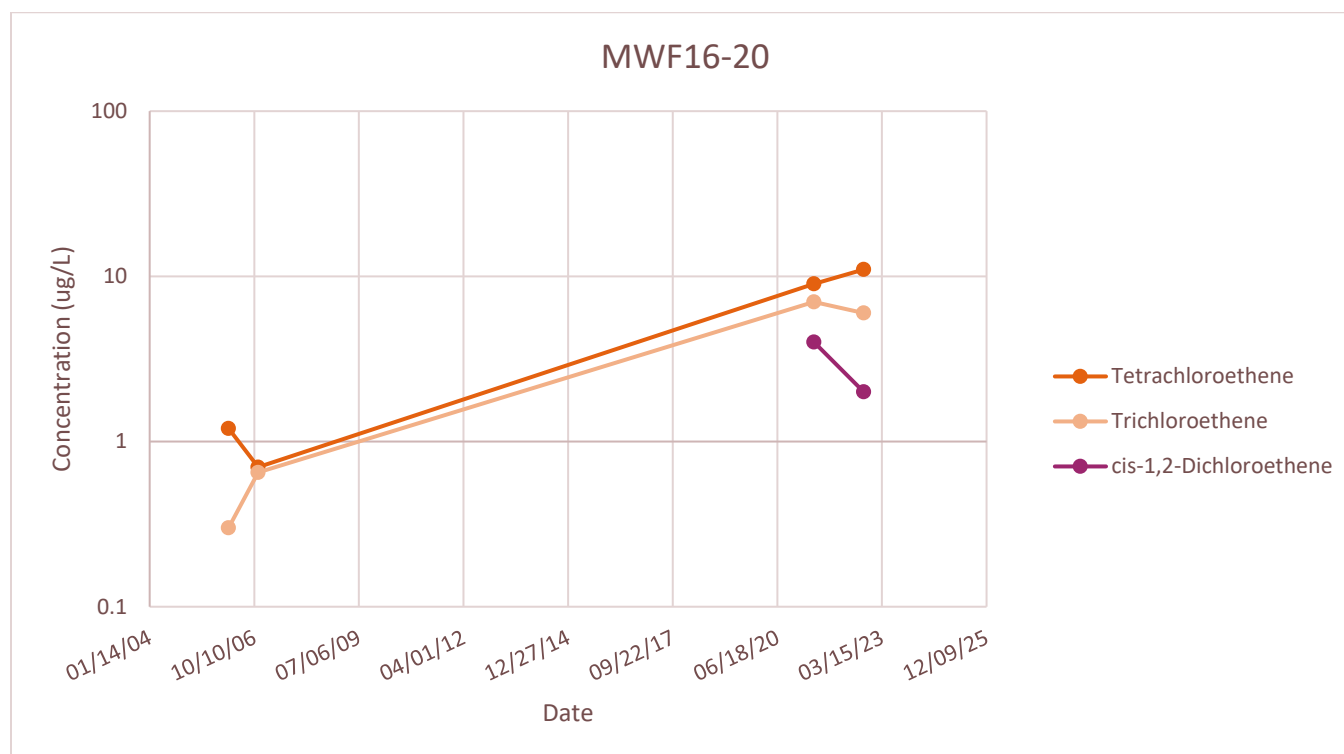
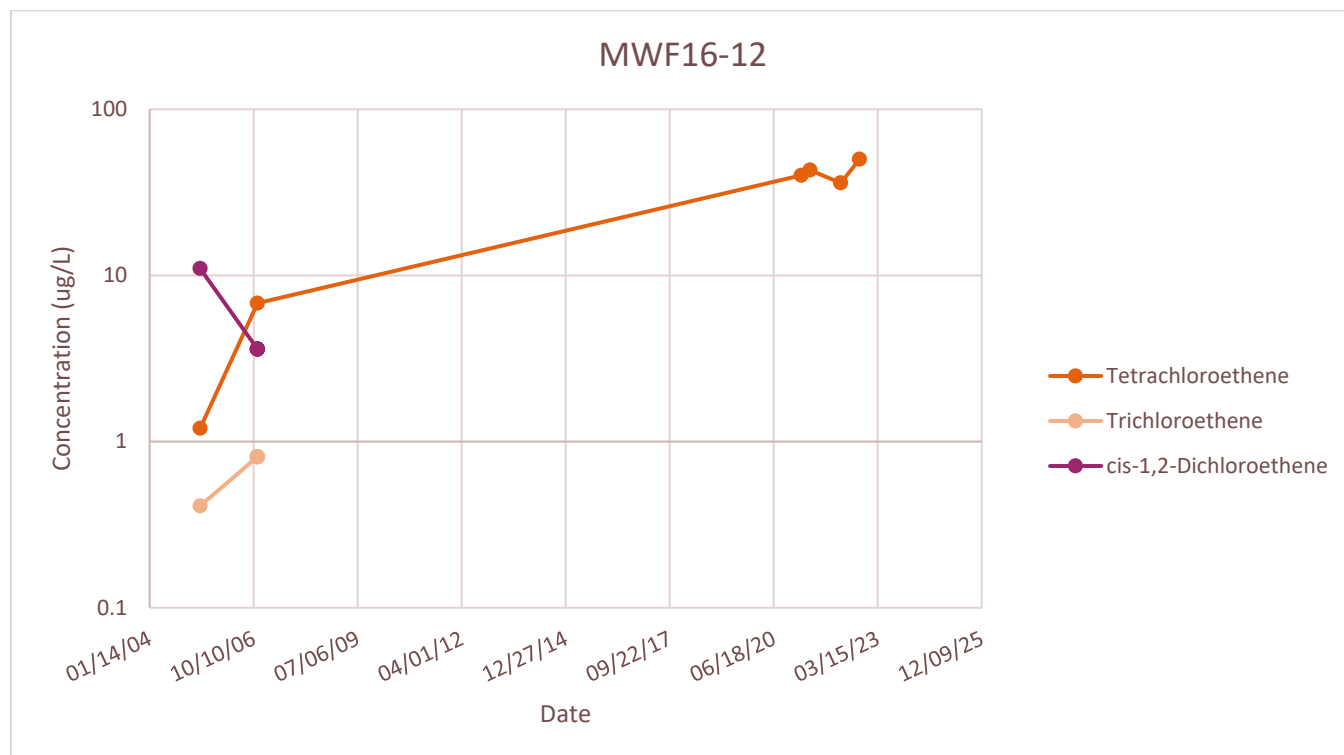
Concentration Over Time Graphs



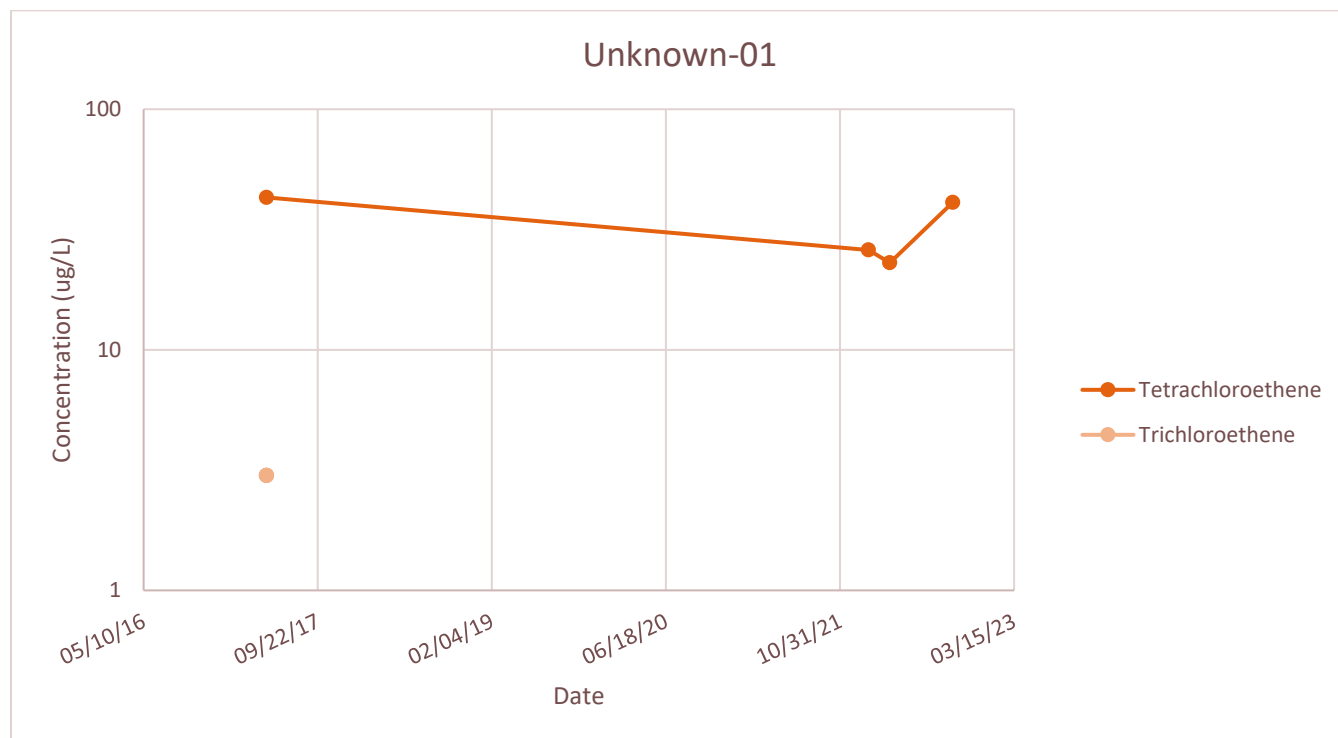
Concentration Over Time Graphs



Concentration Over Time Graphs



Concentration Over Time Graphs



Appendix D-1
Summary Statistics and Trend Results
RACER Trust Pontiac North Campus
Pontiac, MI



Well ID	Analyte	Date Range	Figure	FOD	Detected Results Summary ¹				Mann-Kendall Test ²		
					Range	Mean	Median	SD	Result ⁴	P-Value	S Value
MW-02-17	PCE	04/17 - 11/22	D-1	12 / 13	3 - 12	7.2	7.5	3.2	DWN	0.054	-27
MW-02-17	TCE	04/17 - 11/22	D-2	12 / 13	1 - 7	3	2	1.8	NST	0.158	16
MW-05-18	cDCE	10/18 - 11/22	D-3	11 / 11	3 - 15	9.5	11	3.5	NST	0.376	-5
MW-06-20	TCE	09/20 - 11/22	D-4	10 / 10	7 - 12	9.2	8.5	1.8	UP	0.078	17
MW-06-20	cDCE	09/20 - 11/22	D-5	10 / 10	4 - 10	6.8	7	1.7	NST	0.536	0
MW-07-20	TCE	08/20 - 11/22	D-6	8 / 8	2 - 3	2.4	2	0.52	NST	0.500	-1
MW-07-20	cDCE	08/20 - 11/22	D-7	8 / 8	9 - 15	12	12.5	2.4	NST	0.406	3
MW-08-21	TCE	06/21 - 11/22	D-8	7 / 7	9 - 12	10	10	1	NST	0.443	-2
MW-08-21	cDCE	06/21 - 11/22	D-9	6 / 7	3 - 12	8.7	10.5	3.7	NST	0.563	0
MW-09-22	PCE	01/22 - 12/22	D-10	5 / 5	48 - 195	109	95	63.1	NST	0.408	2
MW-09-22	TCE	01/22 - 12/22	D-11	4 / 5	1 - 4	2.5	2.5	1.3	NST	0.592	0
MWF16-05	PCE	10/17 - 11/22	D-12	8 / 8	12 - 730	502	505	229	UP	0.054	14
MWF16-05	TCE	10/17 - 11/22	D-13	7 / 8	3 - 40	26.1	30	11.7	NST	0.452	2
MWF16-06	PCE	04/17 - 11/22	D-14	10 / 10	43 - 127	72.2	68	25.8	NST	0.242	-9
MWF16-06	TCE	04/17 - 11/22	D-15	10 / 10	7 - 30	14.3	11.5	7.7	NST	0.127	-14
MWF16-06	cDCE	04/17 - 11/22	D-16	10 / 10	12 - 150	50.1	28.5	44.6	NST	0.431	3
MWF16-15	TCE	04/17 - 09/22	D-17	5 / 6	2 - 3	2.4	2	0.55	NST	0.136	7
MWF16-15	cDCE	04/17 - 09/22	D-18	6 / 6	1 - 15	7.2	4.5	5.8	NST	0.430	-2
MWF16-16	PCE	10/17 - 12/22	D-19	10 / 10	14 - 490	286	275	147	UP	0.066	18
MWF16-16	TCE	10/17 - 12/22	D-20	5 / 10	4 - 20	12	10	7.2	NST	0.300	-7
MWF16-16	cDCE	10/17 - 12/22	D-21	7 / 10	2 - 20	13.7	15	6.8	NST	0.398	-4
MWF16-18	PCE	03/21 - 12/22	D-22	7 / 7	740 - 1350	1130	1220	221	NST	0.281	5
MWF16-18	TCE	03/21 - 12/22	D-23	7 / 7	10 - 20	18.6	20	3.8	NST	0.236	6
MWF16-18	cDCE	03/21 - 12/22	D-24	7 / 7	20 - 100	62.9	70	28.1	UP	0.003	18
MWF16-22	PCE	09/20 - 12/22	D-25	6 / 6	69 - 82	75.7	76	4.4	NST	0.430	2
MWF16-22	TCE	09/20 - 12/22	D-26	6 / 6	2 - 2	2	2	0	NST	0.577	0
MWF16-22	cDCE	09/20 - 12/22	D-27	6 / 6	5 - 10	7.8	8	2.1	NST	0.186	6
MWF16-23	TCE	10/17 - 11/22	D-28	13 / 13	9 - 23	17.5	17	3.8	NST	0.379	-6
MWF16-23	cDCE	10/17 - 11/22	D-29	13 / 13	2 - 21	10.3	11	5.4	NST	0.263	-11
MWF16-25	cDCE	10/18 - 11/22	D-30	11 / 11	5 - 43	19.1	12	14	UP	<0.001	49
MWF7-02	PCE	04/17 - 11/22	D-31	10 / 10	26 - 115	67.5	73.5	31.2	UP	<0.001	36
MWF7-02	TCE	04/17 - 11/22	D-32	10 / 10	3 - 5	3.6	3.5	0.7	NST	0.108	15
MWF7-02	cDCE	04/17 - 11/22	D-33	10 / 10	1 - 3	2.4	2.5	0.7	DWN	0.054	-19
MWOS-08	cDCE	09/20 - 11/22	D-34	9 / 9	1 - 6	3.3	4	1.5	NST	0.209	-9
MWOS-09R	PCE	11/21 - 11/22	D-35	6 / 6	10 - 15	12.7	13	1.9	NST	0.430	2
MWOS-09R	TCE	11/21 - 11/22	D-36	6 / 6	3 - 5	3.7	3.5	0.82	DWN	0.068	-9
MWOS-09R	cDCE	11/21 - 11/22	D-37	6 / 6	20 - 28	24.3	24	3.3	NST	0.430	2

Appendix D-1
Summary Statistics and Trend Results
RACER Trust Pontiac North Campus
Pontiac, MI



Well ID	Analyte	Date Range	Figure	FOD	Detected Results Summary ¹				Mann-Kendall Test ²		
					Range	Mean	Median	SD	Result ⁴	P-Value	S Value
MWOS-10	TCE	11/21 - 11/22	D-38	6 / 6	7 - 11	8.3	8	1.5	NST	0.136	-7
MWOS-10	cDCE	11/21 - 11/22	D-39	6 / 6	4 - 9	6	6	1.9	DWN	0.068	-9
TW-12-22	TCE	01/22 - 12/22	D-40	5 / 5	5 - 7	6	6	0.71	NST	0.325	-3
TW-12-22	cDCE	01/22 - 12/22	D-41	5 / 5	32 - 85	58.4	57	19.6	NST	0.592	0

Abbreviations:

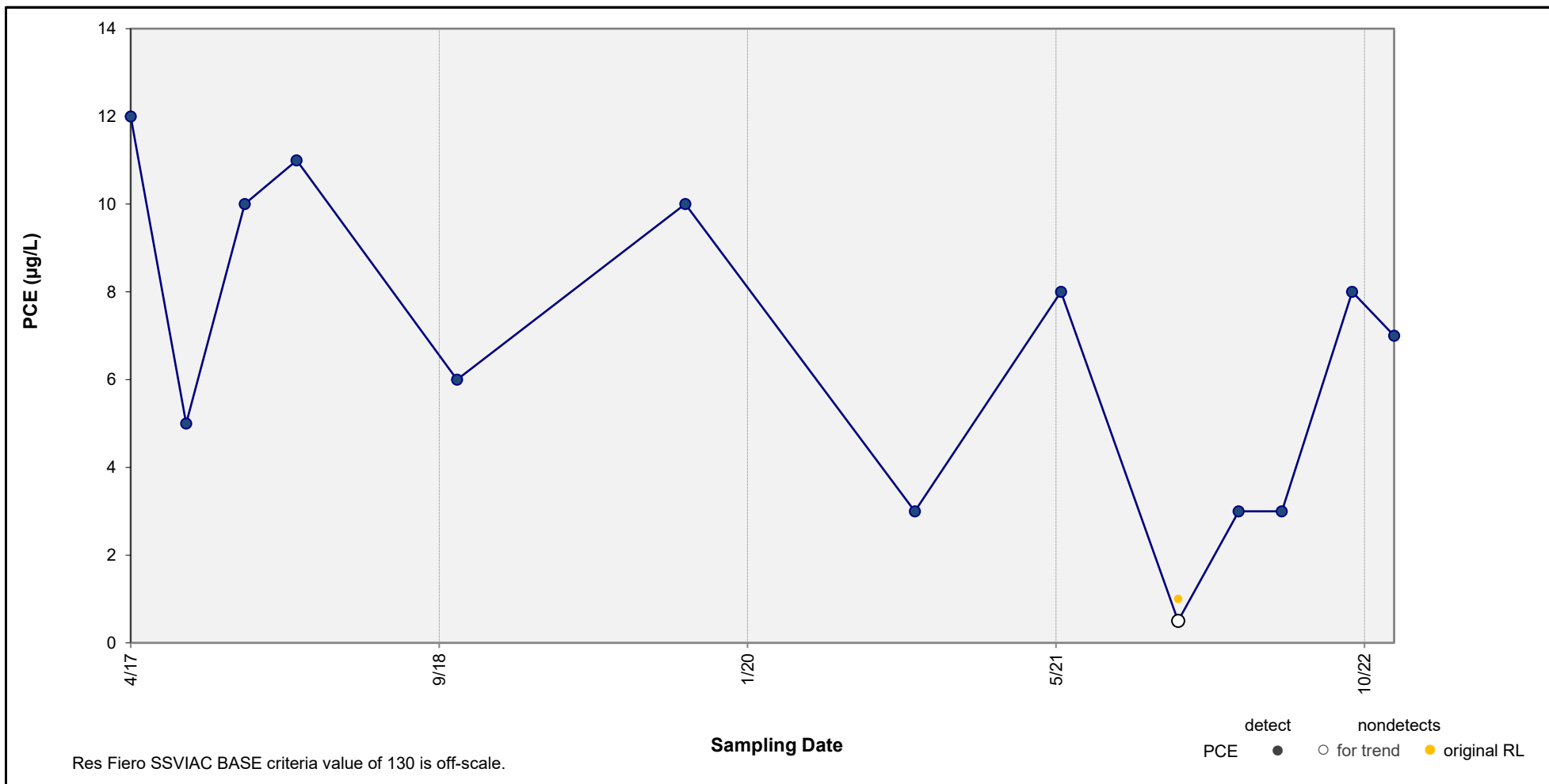
-- : insufficient data for calculating statistics (n < 6) or not available	NT : no trend
cDCE : cis-1,2-dichloroethene	PCE : tetrachloroethene
DWN : downward trend	SD : standard deviation
FOD : frequency of detection (# detects / # samples)	TCE : trichloroethene
mean : arithmetic mean	UP : upward trend
NST : no significant trend	

Notes:

1. All analytical results are in microgram per liter.
2. Trend results are presented when: a) at least five points collected after 2017 and b) at least 50% detections since 2017.
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 ≤ 0.10 , or 90% confidence.

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 = 0.054 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

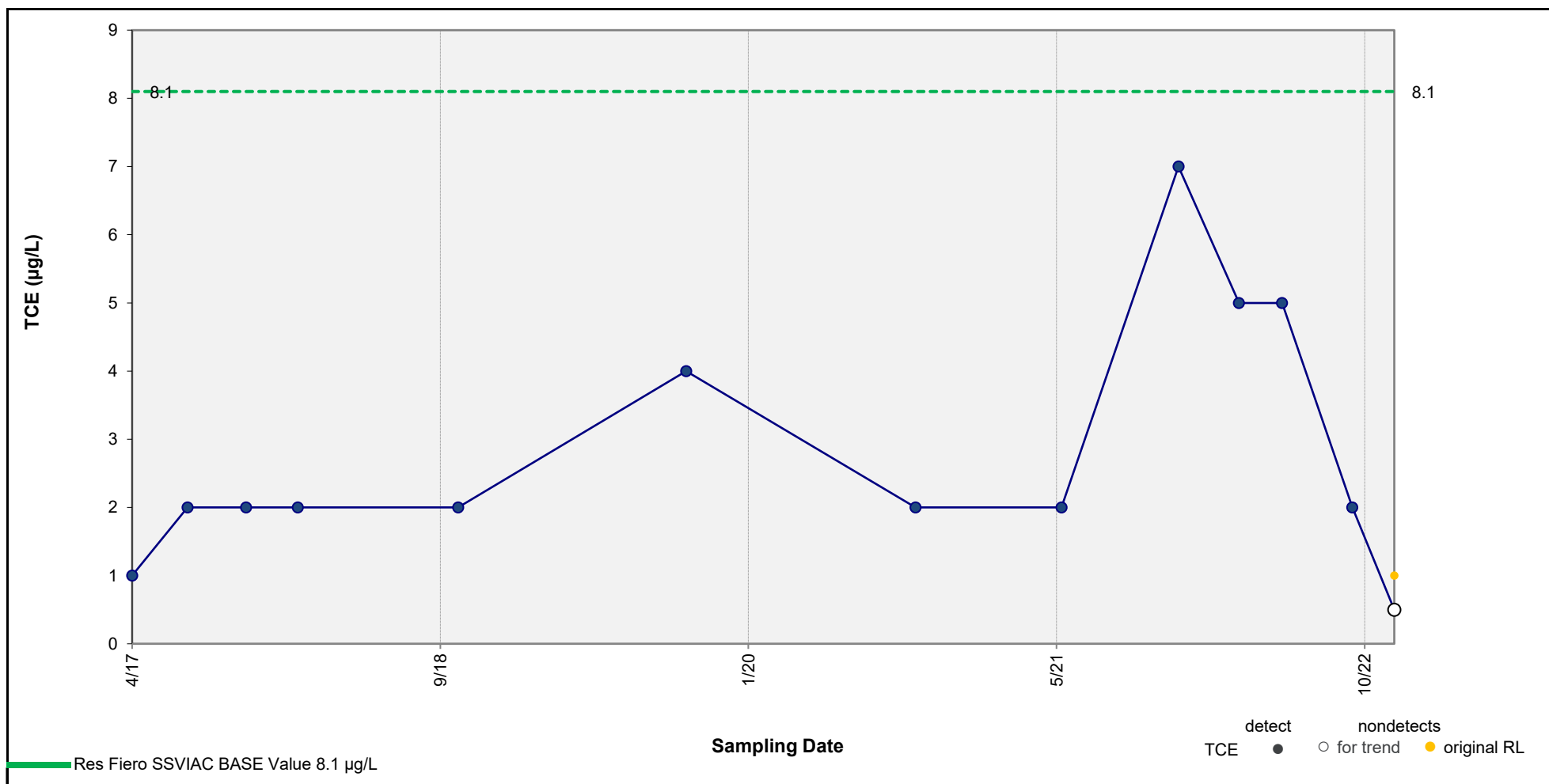
No trend

Median Slope Estimate = -2.1E-03 µg/L Per Day
95% Confidence Interval = -4.4E-03 to 0.0E+00 µg/L Per Day



Concentration vs. Time Plot – PCE in Well MW-02-17
Racer PNC Stability Analysis

**FIGURE
D-1**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.158 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

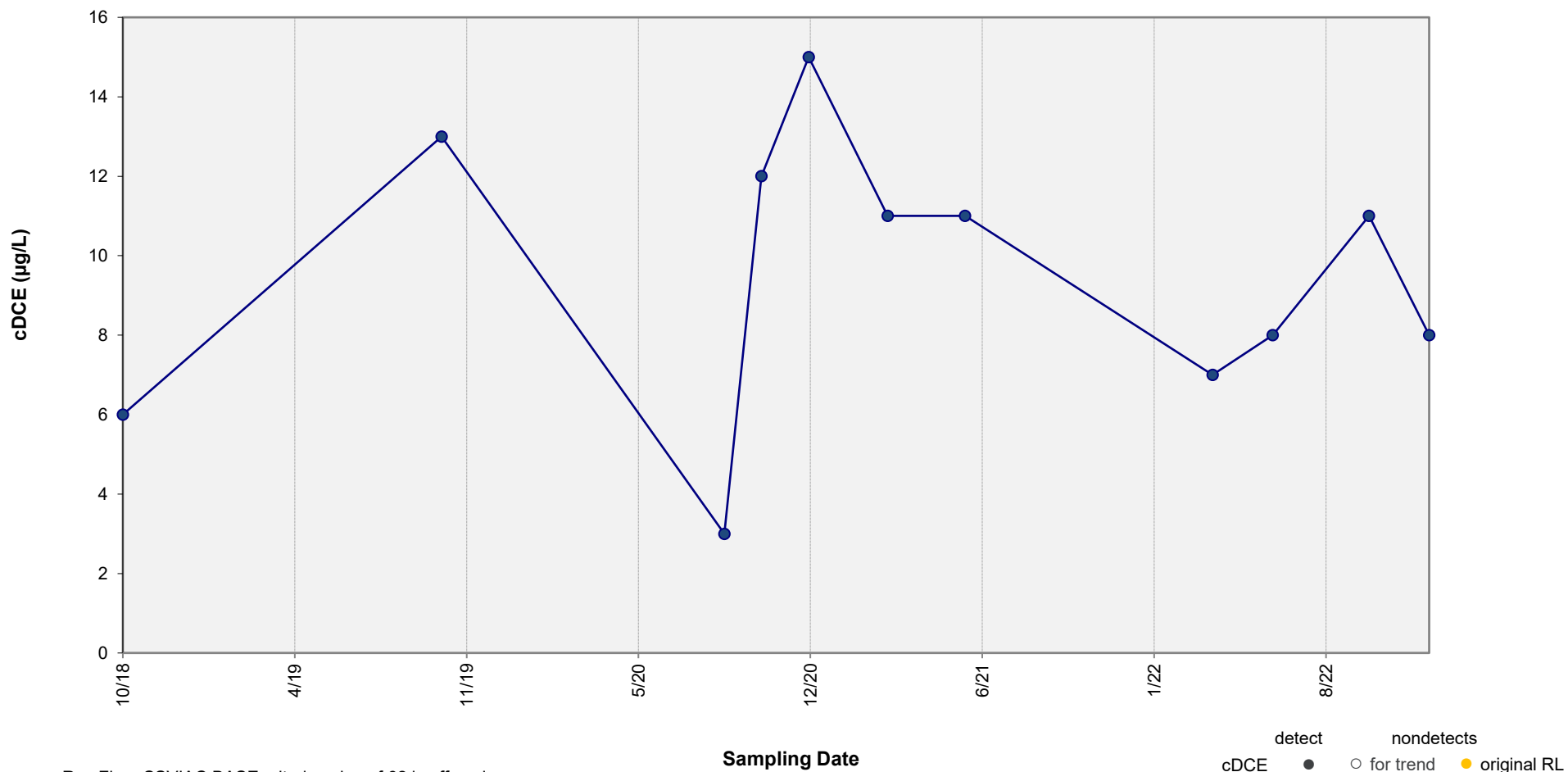
No trend

Median Slope Estimate = 0.0E+00 µg/L Per Day
 95% Confidence Interval = 0.0E+00 to 1.9E-03 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MW-02-17
 Racer PNC Stability Analysis

**FIGURE
D-2**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.376 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

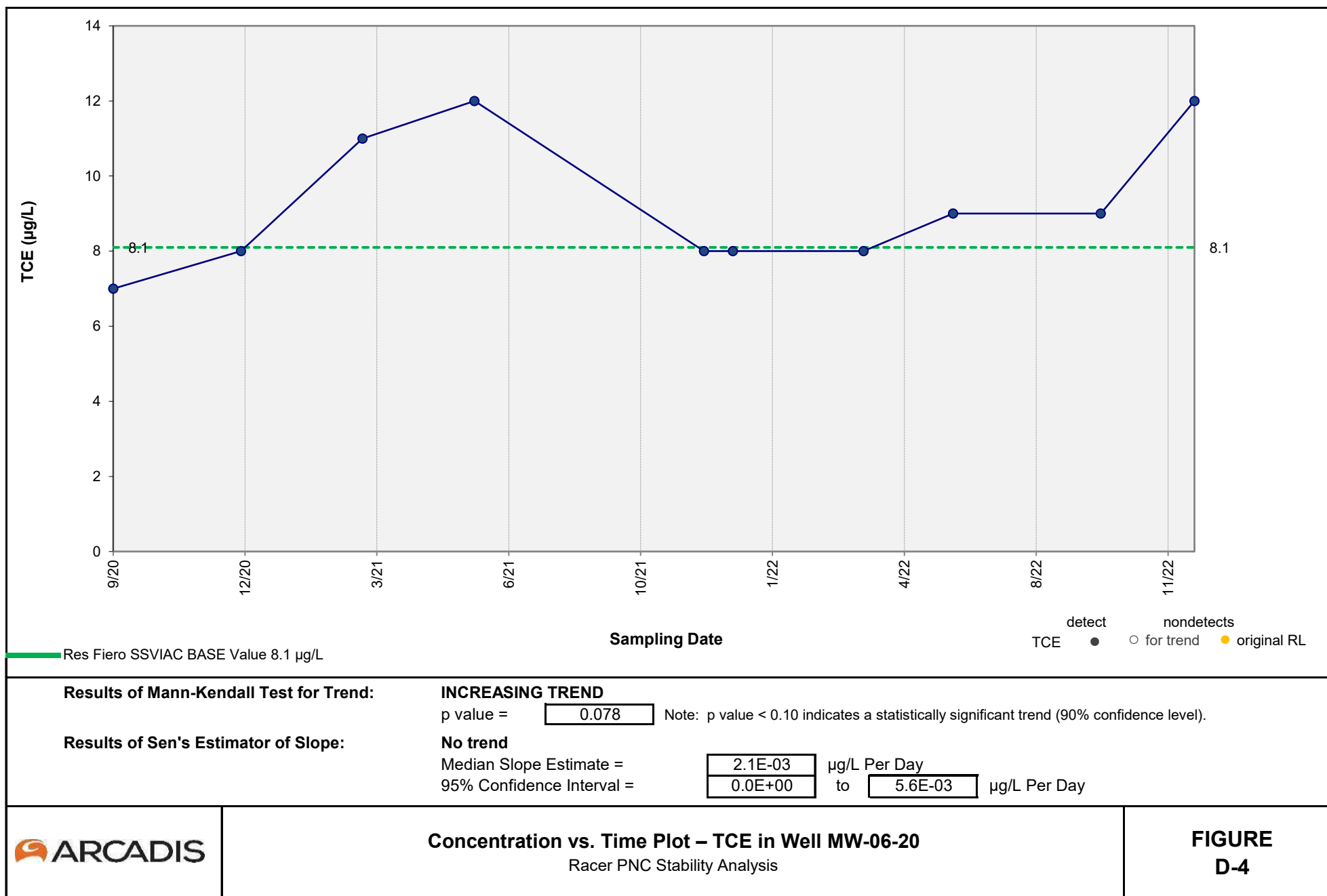
No Significant Trend

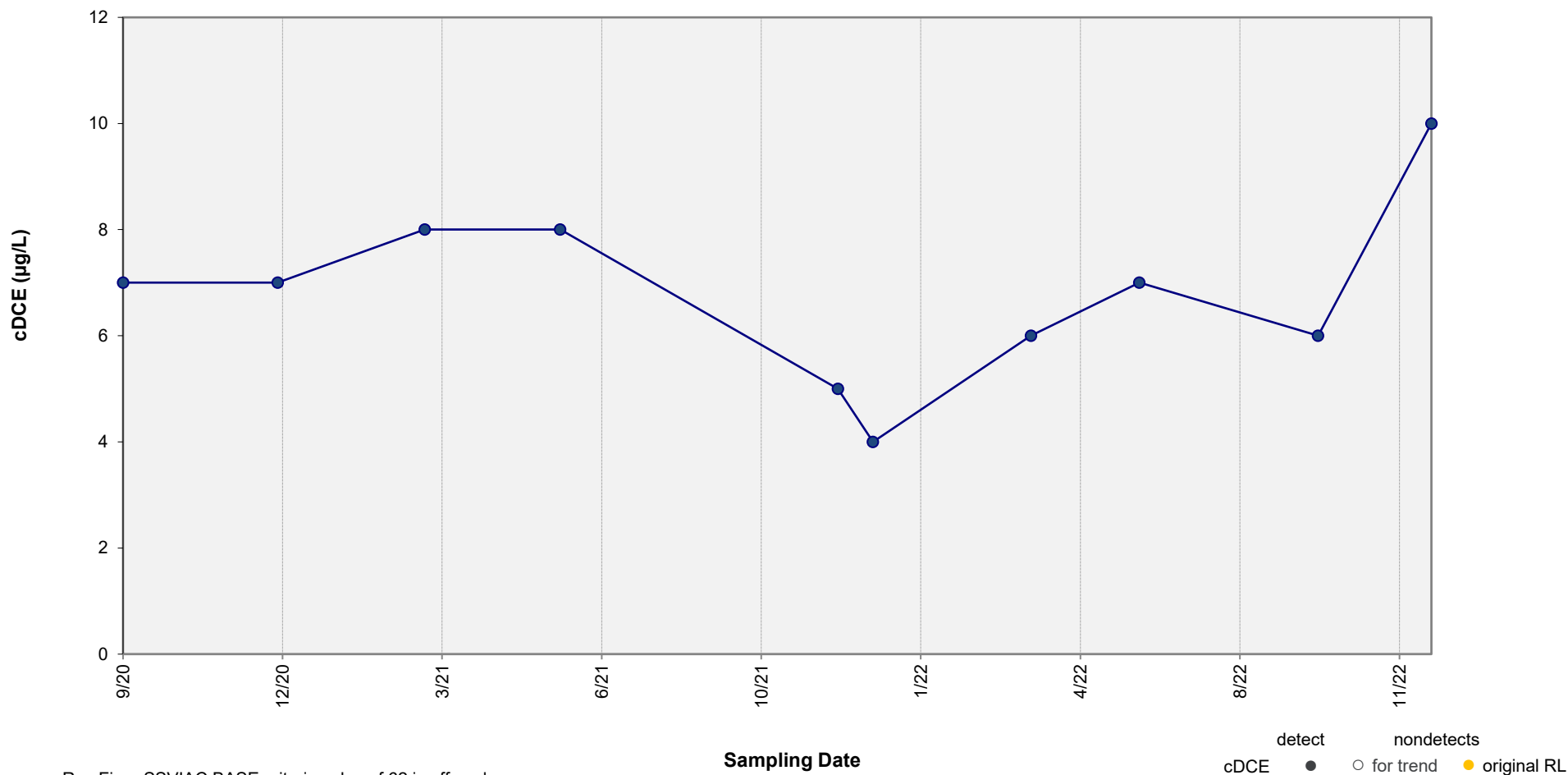
Median Slope Estimate = -1.4E-03 µg/L Per Day
 95% Confidence Interval = -5.5E-03 to 4.5E-03 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MW-05-18
 Racer PNC Stability Analysis

**FIGURE
D-3**





Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.536 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

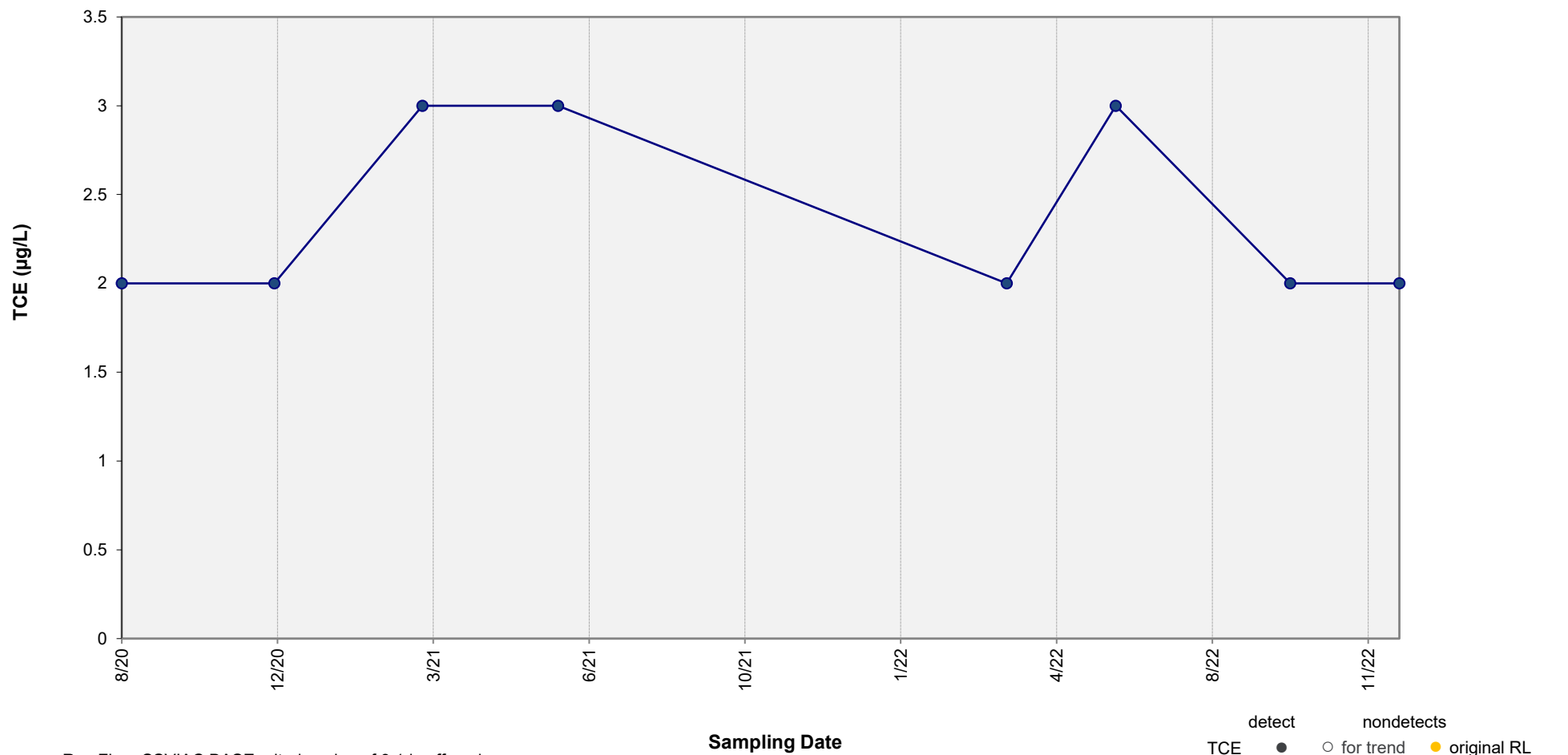
No Significant Trend

Median Slope Estimate = 0.0E+00 µg/L Per Day
 95% Confidence Interval = -3.8E-03 to 4.6E-03 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MW-06-20
 Racer PNC Stability Analysis

**FIGURE
D-5**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.500 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

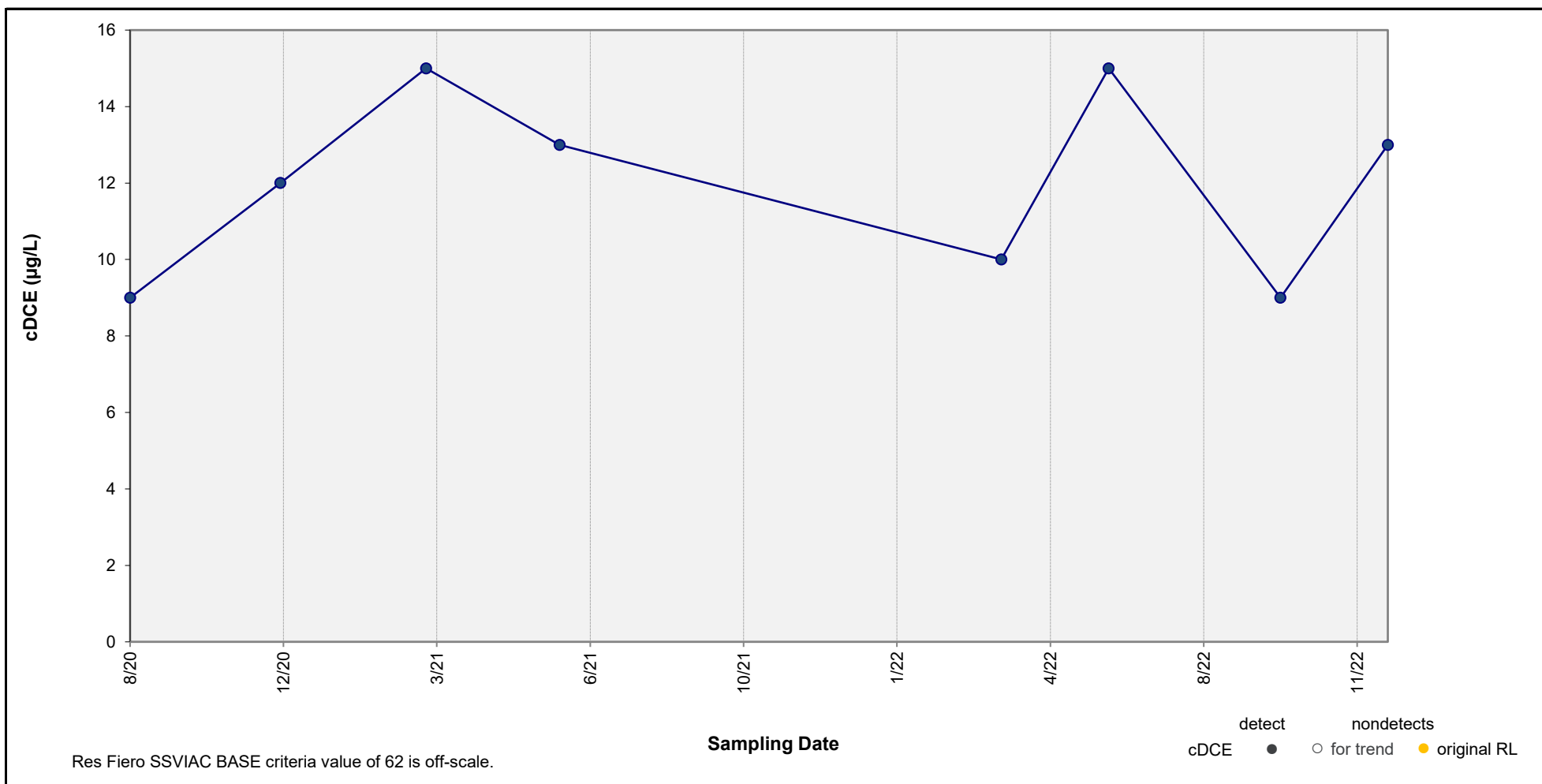
No trend

Median Slope Estimate = 0.0E+00 µg/L Per Day
 95% Confidence Interval = -7.2E-04 to 0.0E+00 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MW-07-20
 Racer PNC Stability Analysis

**FIGURE
D-6**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.406 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

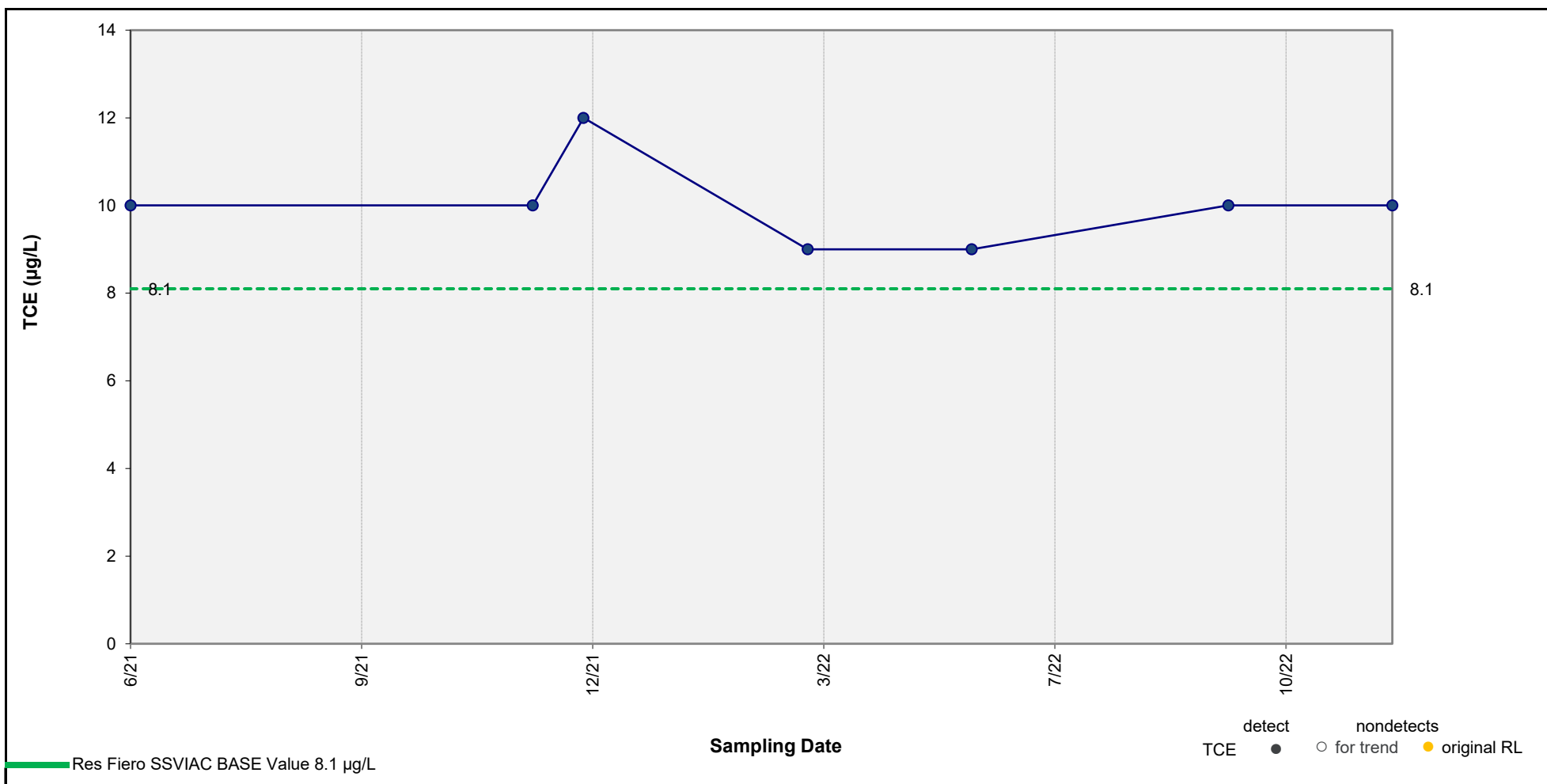
No Significant Trend

Median Slope Estimate = 6.9E-04 µg/L Per Day
 95% Confidence Interval = -6.8E-03 to 7.2E-03 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MW-07-20
 Racer PNC Stability Analysis

**FIGURE
D-7**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.443 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

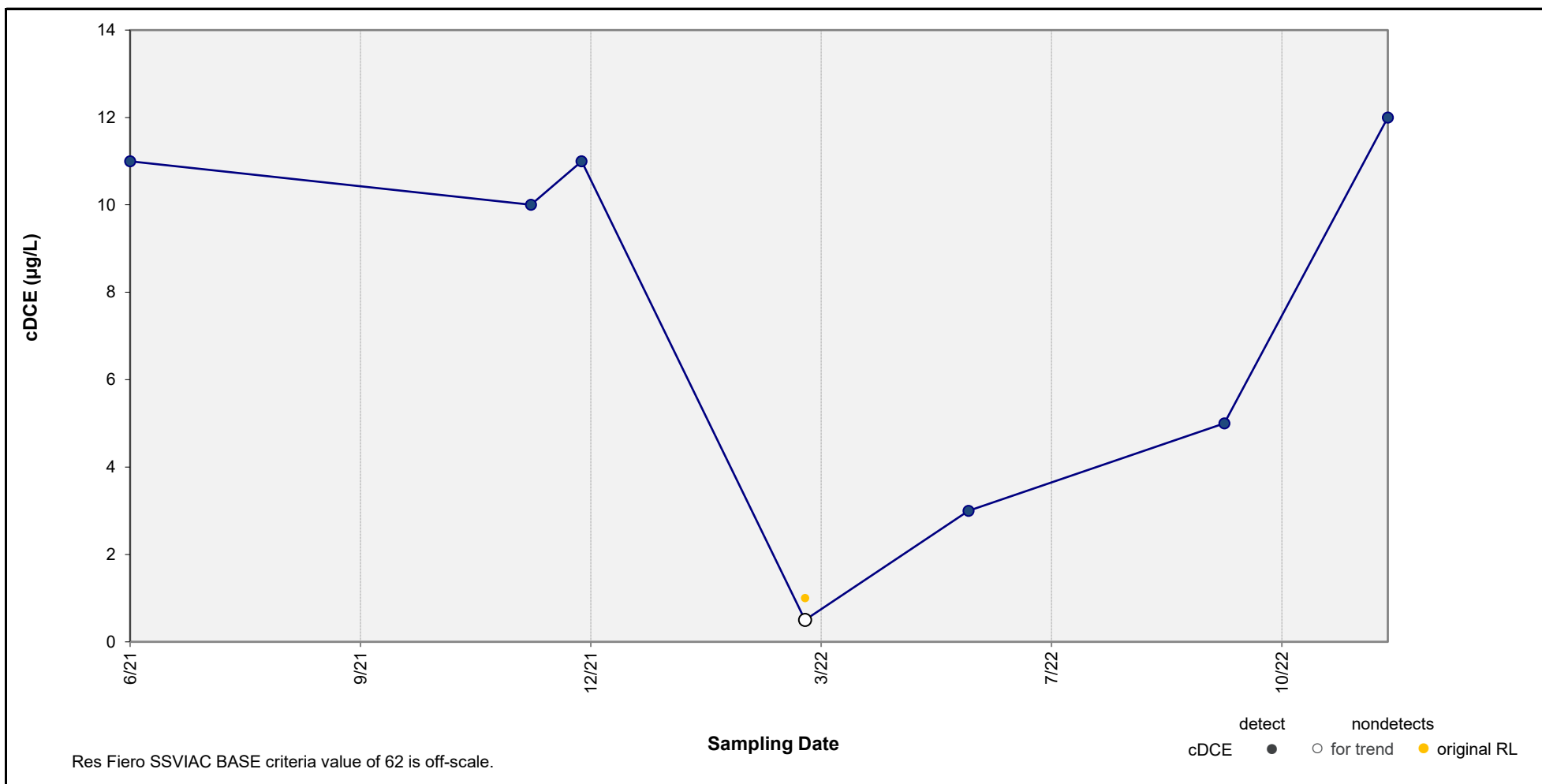
No Significant Trend

Median Slope Estimate = 0.0E+00 µg/L Per Day
95% Confidence Interval = -5.4E-03 to 1.1E-03 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MW-08-21
Racer PNC Stability Analysis

**FIGURE
D-8**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.563 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

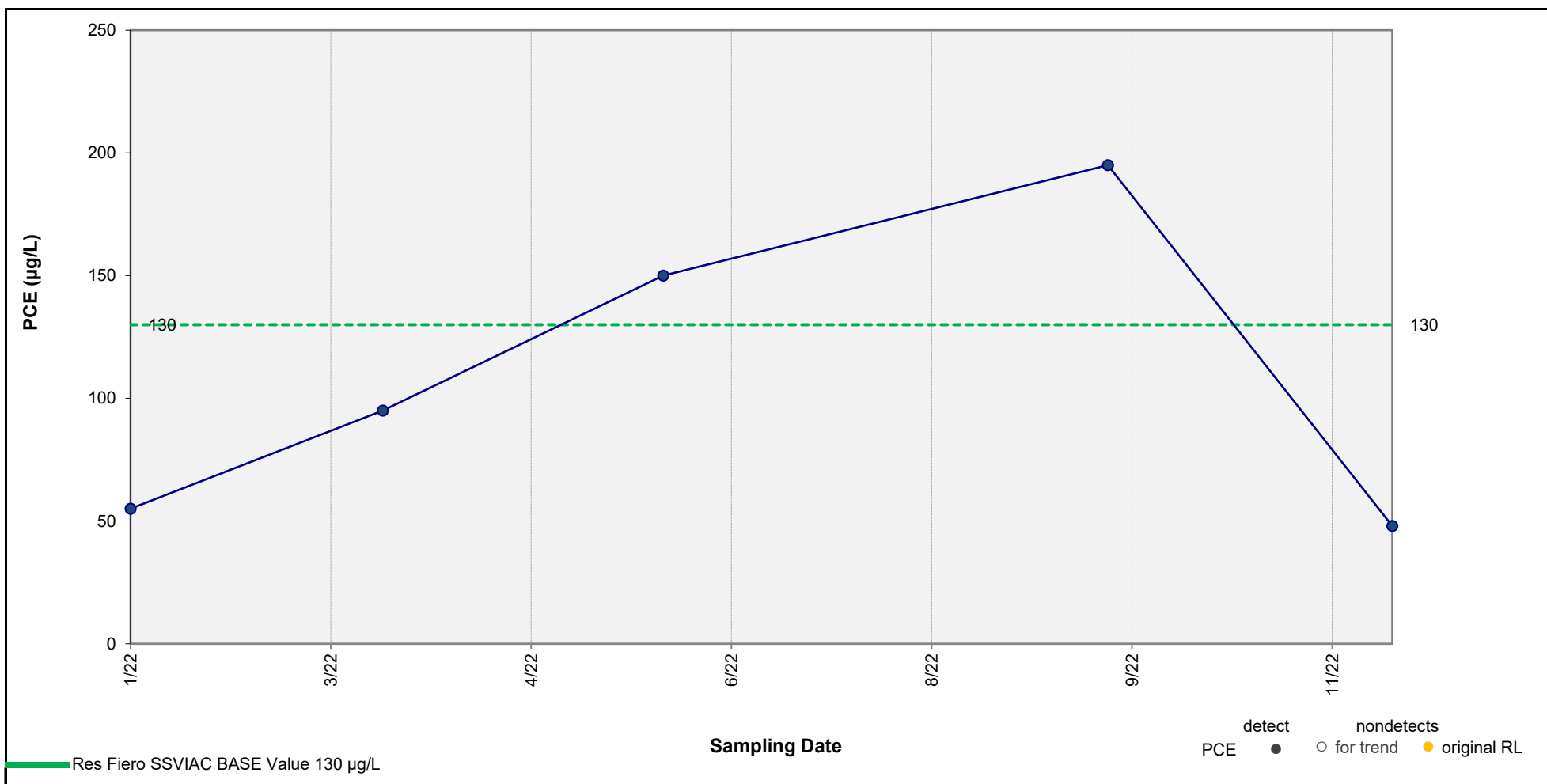
No Significant Trend

Median Slope Estimate = 0.0E+00 µg/L Per Day
 95% Confidence Interval = -3.4E-02 to 2.4E-02 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MW-08-21
 Racer PNC Stability Analysis

**FIGURE
D-9**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.408 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

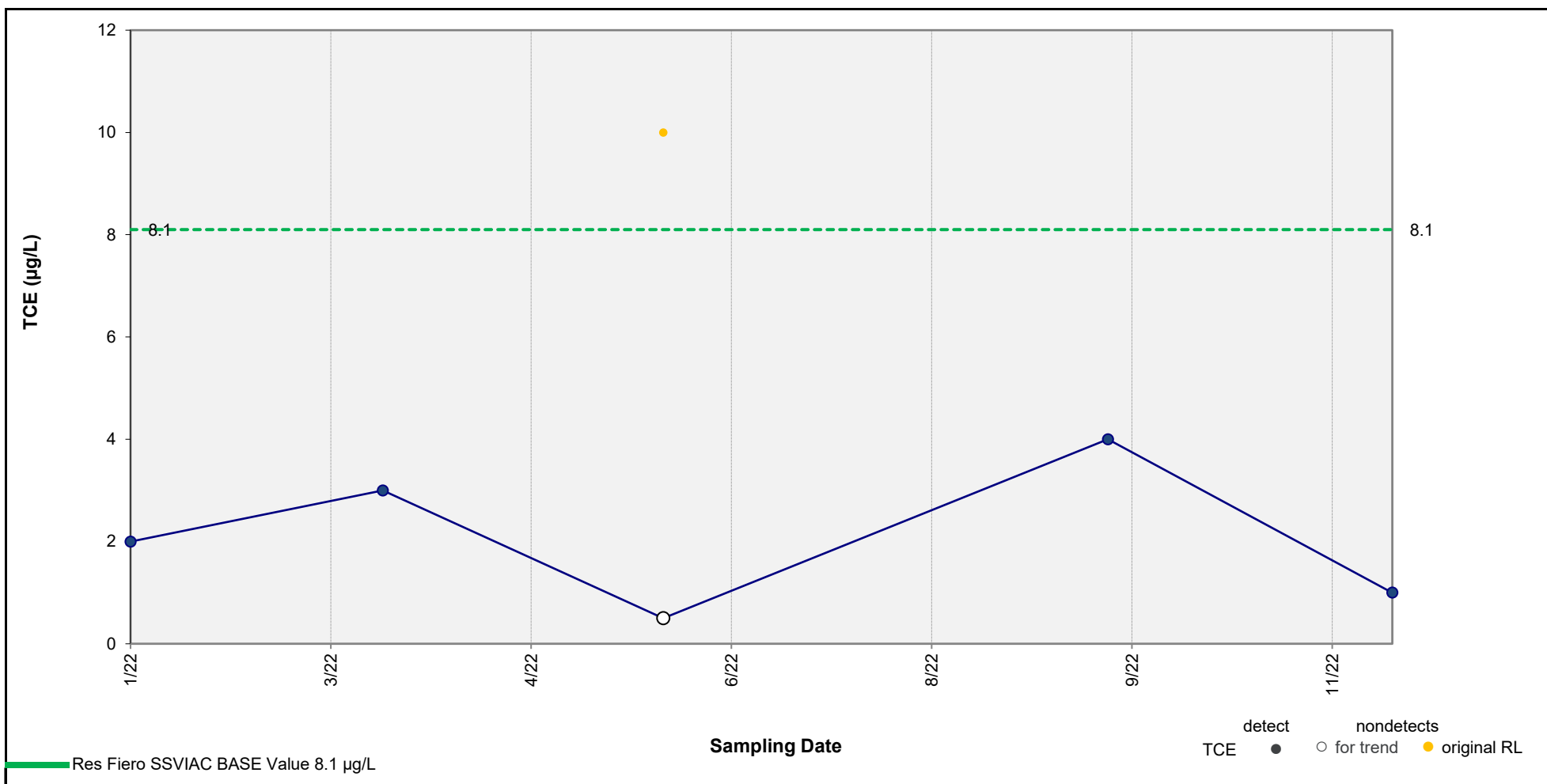
Not Analyzed (Sample Size less than 6)

Median Slope Estimate = -- µg/L Per Day
 95% Confidence Interval = -- to -- µg/L Per Day



Concentration vs. Time Plot – PCE in Well MW-09-22
 Racer PNC Stability Analysis

**FIGURE
D-10**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.592 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

Not Analyzed (Sample Size less than 6)

Median Slope Estimate =

--

µg/L Per Day

95% Confidence Interval =

--

to

--

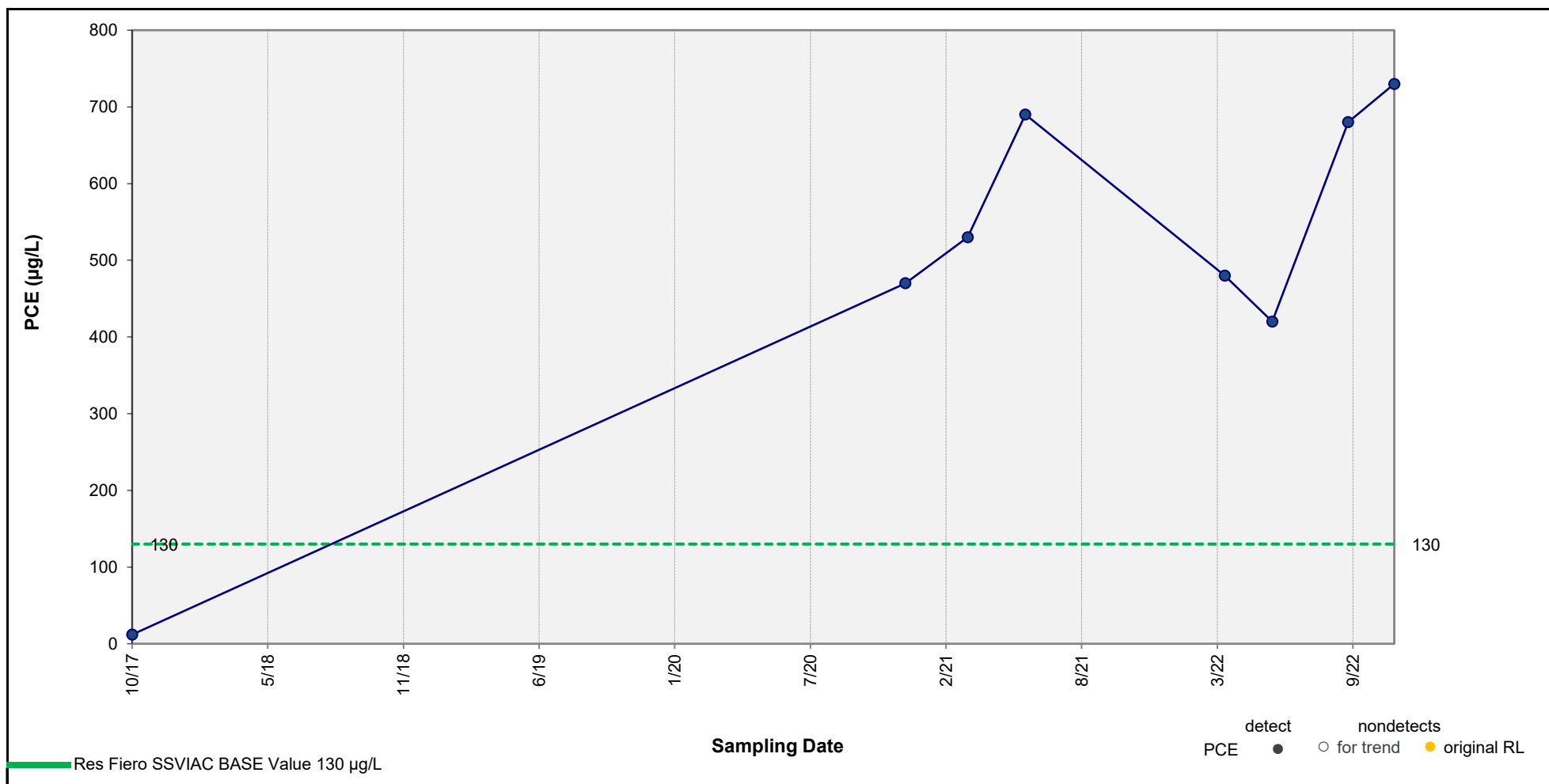
µg/L Per Day



Concentration vs. Time Plot – TCE in Well MW-09-22

Racer PNC Stability Analysis

**FIGURE
D-11**



Results of Mann-Kendall Test for Trend:

INCREASING TREND

p value = Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

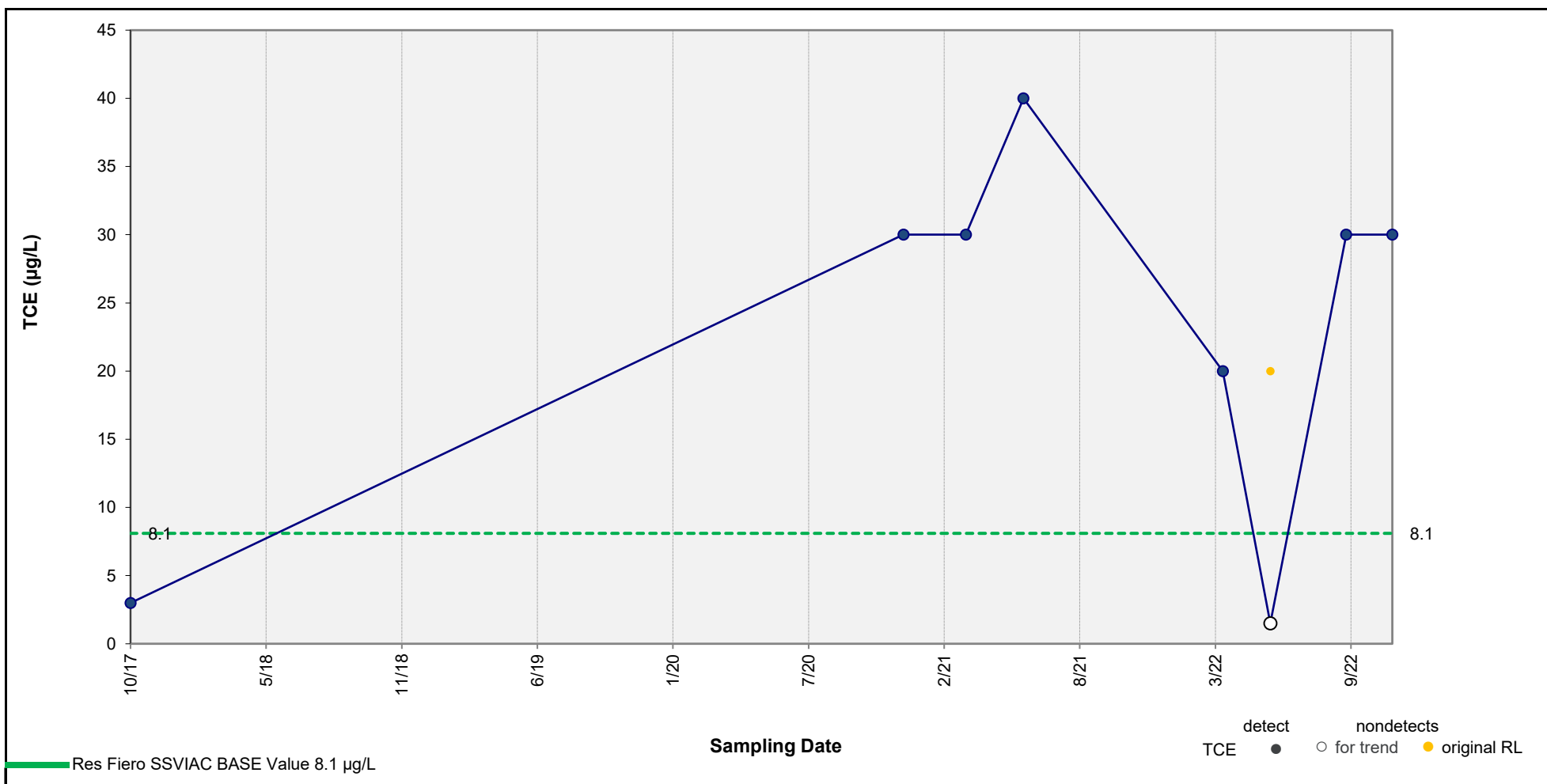
No Significant Trend

Median Slope Estimate = µg/L Per Day
 95% Confidence Interval = to µg/L Per Day



Concentration vs. Time Plot – PCE in Well MWF16-05
 Racer PNC Stability Analysis

**FIGURE
D-12**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.452 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

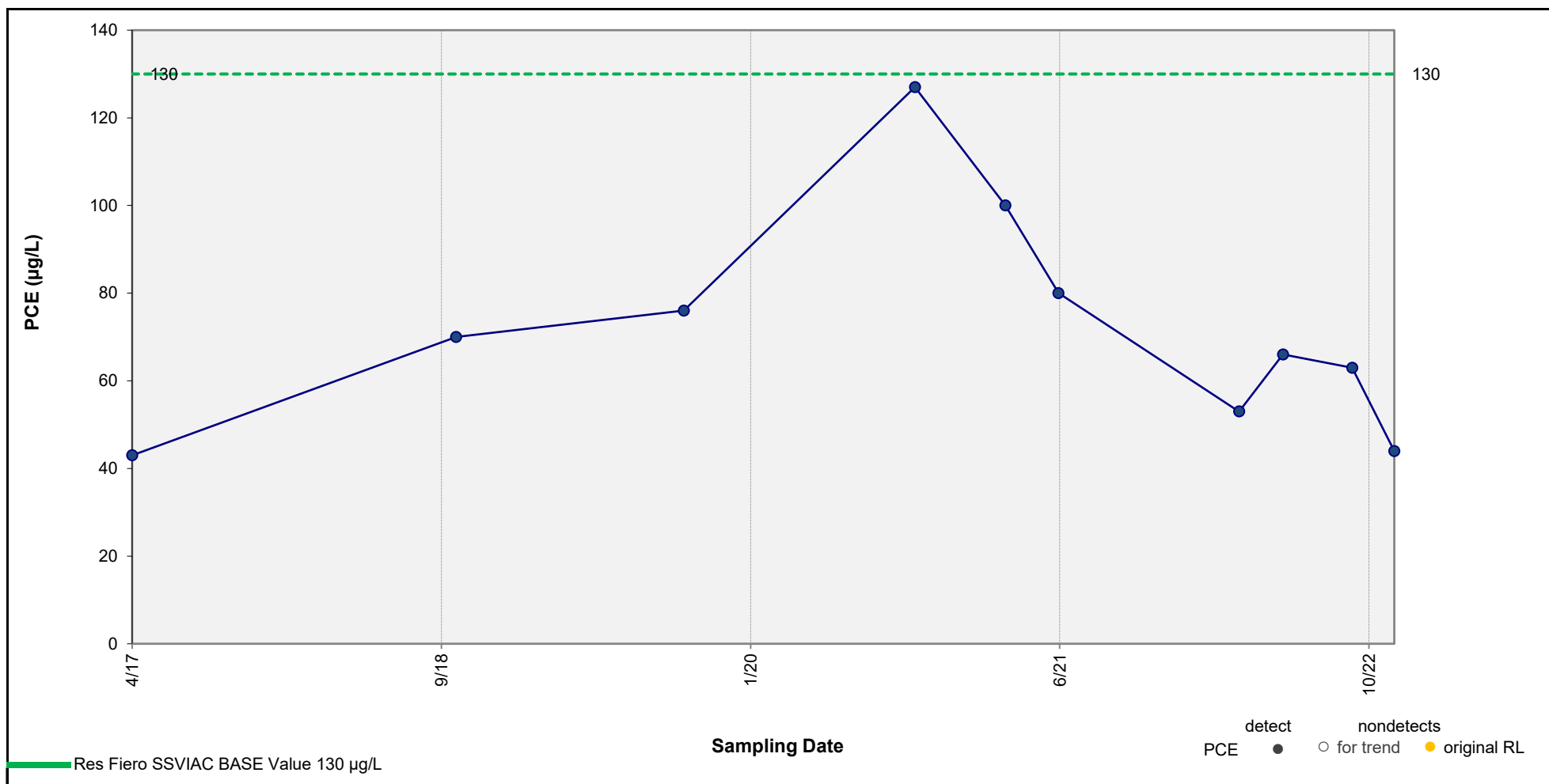
No Significant Trend

Median Slope Estimate = 0.0E+00 µg/L Per Day
95% Confidence Interval = -2.1E-02 to 2.2E-02 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MWF16-05
Racer PNC Stability Analysis

**FIGURE
D-13**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.242 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

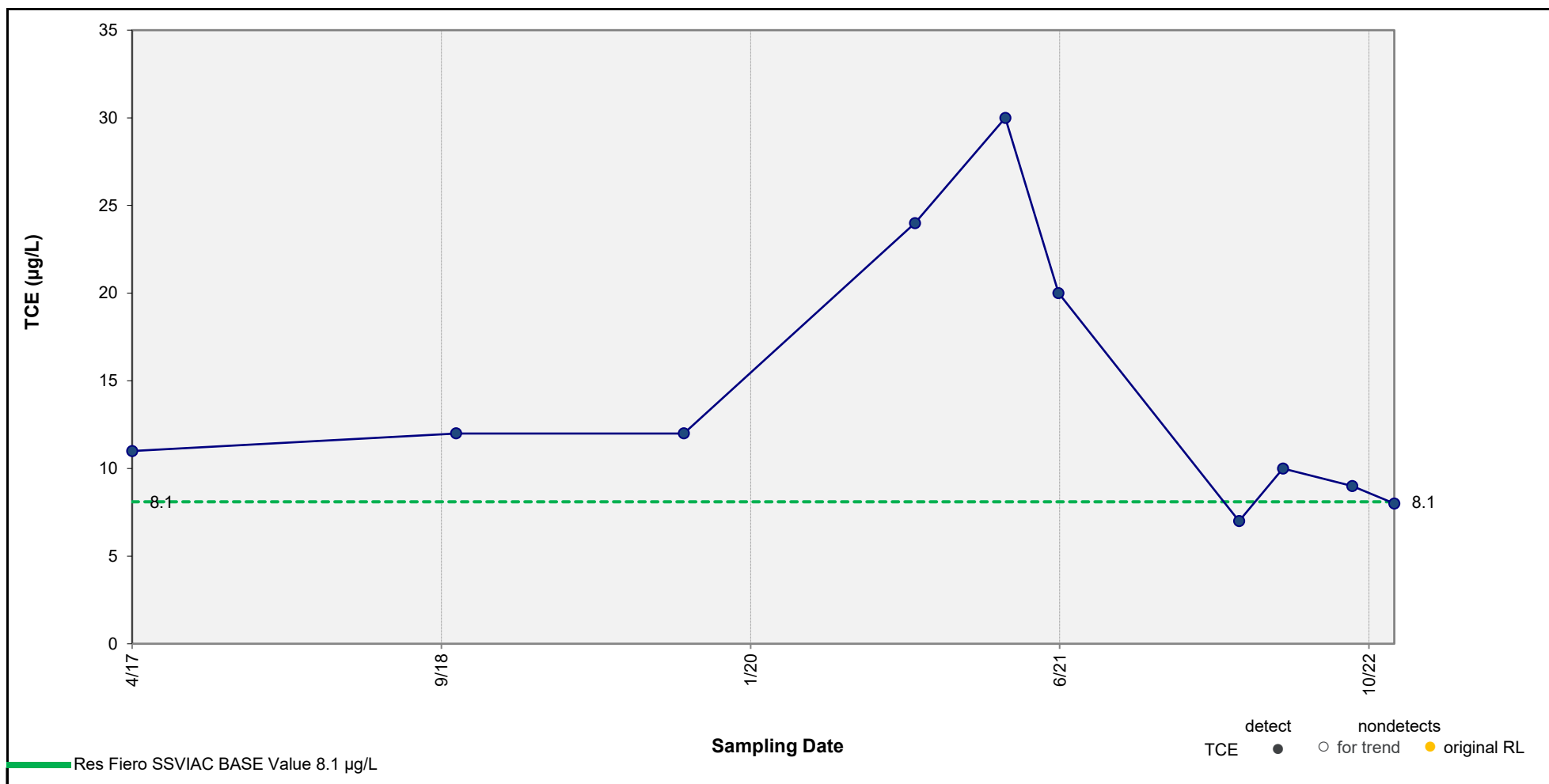
No Significant Trend

Median Slope Estimate = -1.3E-02 µg/L Per Day
95% Confidence Interval = -7.2E-02 to 1.0E-02 µg/L Per Day



Concentration vs. Time Plot – PCE in Well MWF16-06
Racer PNC Stability Analysis

**FIGURE
D-14**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.127 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

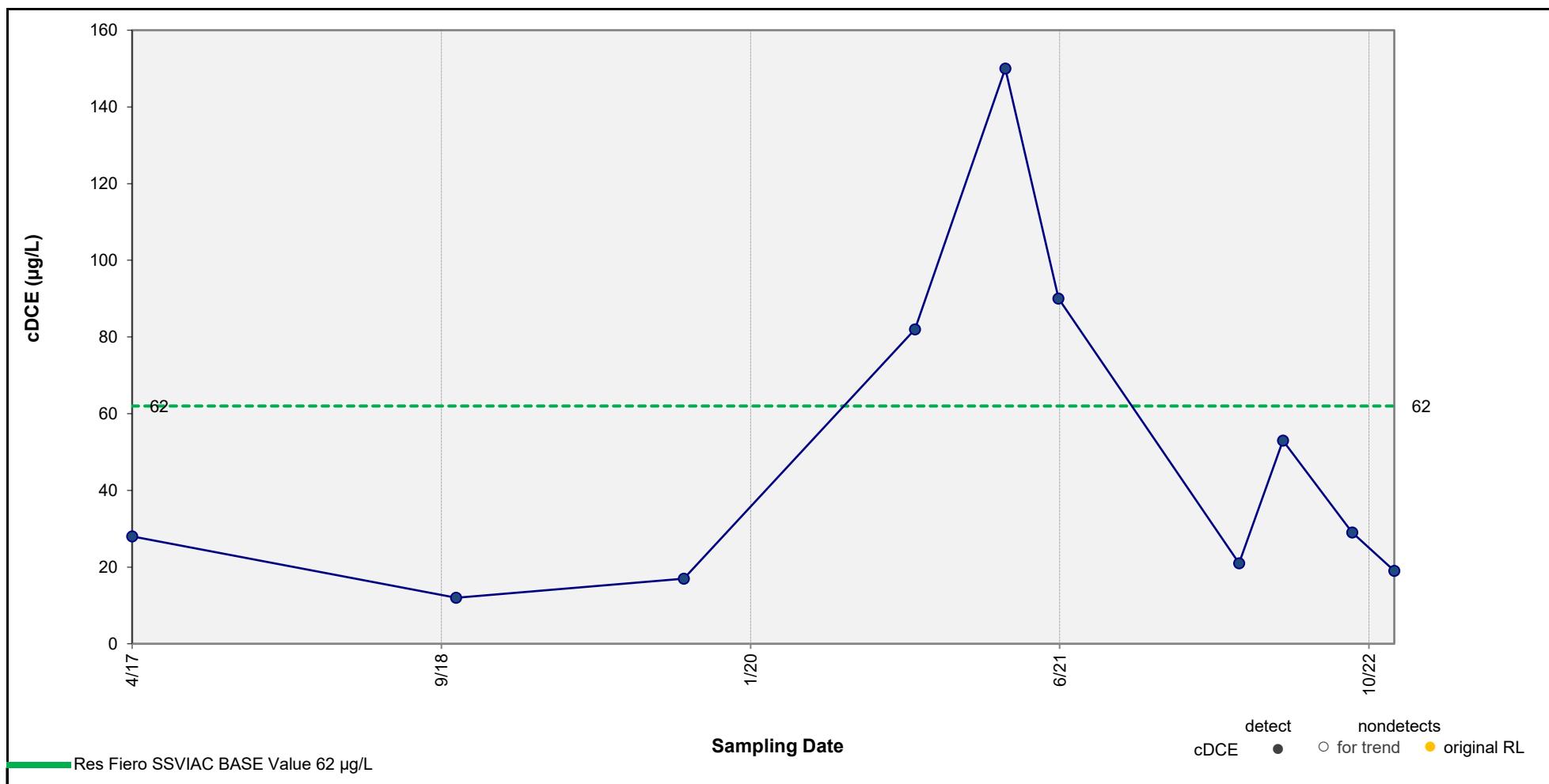
No Significant Trend

Median Slope Estimate = -2.2E-03 µg/L Per Day
 95% Confidence Interval = -1.9E-02 to 1.6E-03 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MWF16-06
 Racer PNC Stability Analysis

**FIGURE
D-15**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.431 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

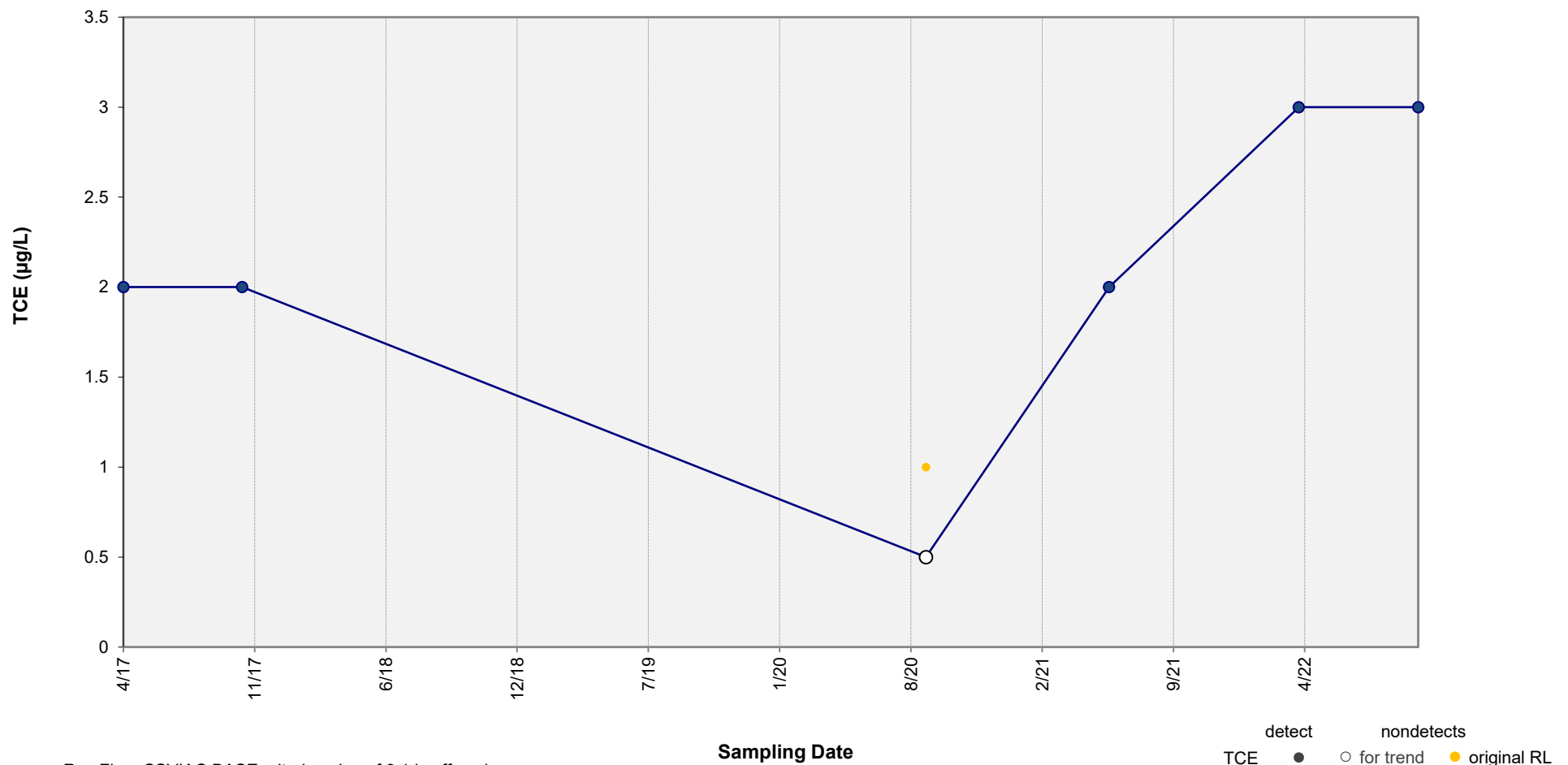
No Significant Trend

Median Slope Estimate = 1.7E-03 µg/L Per Day
 95% Confidence Interval = -9.3E-02 to 3.3E-02 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MWF16-06
 Racer PNC Stability Analysis

**FIGURE
D-16**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.136 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

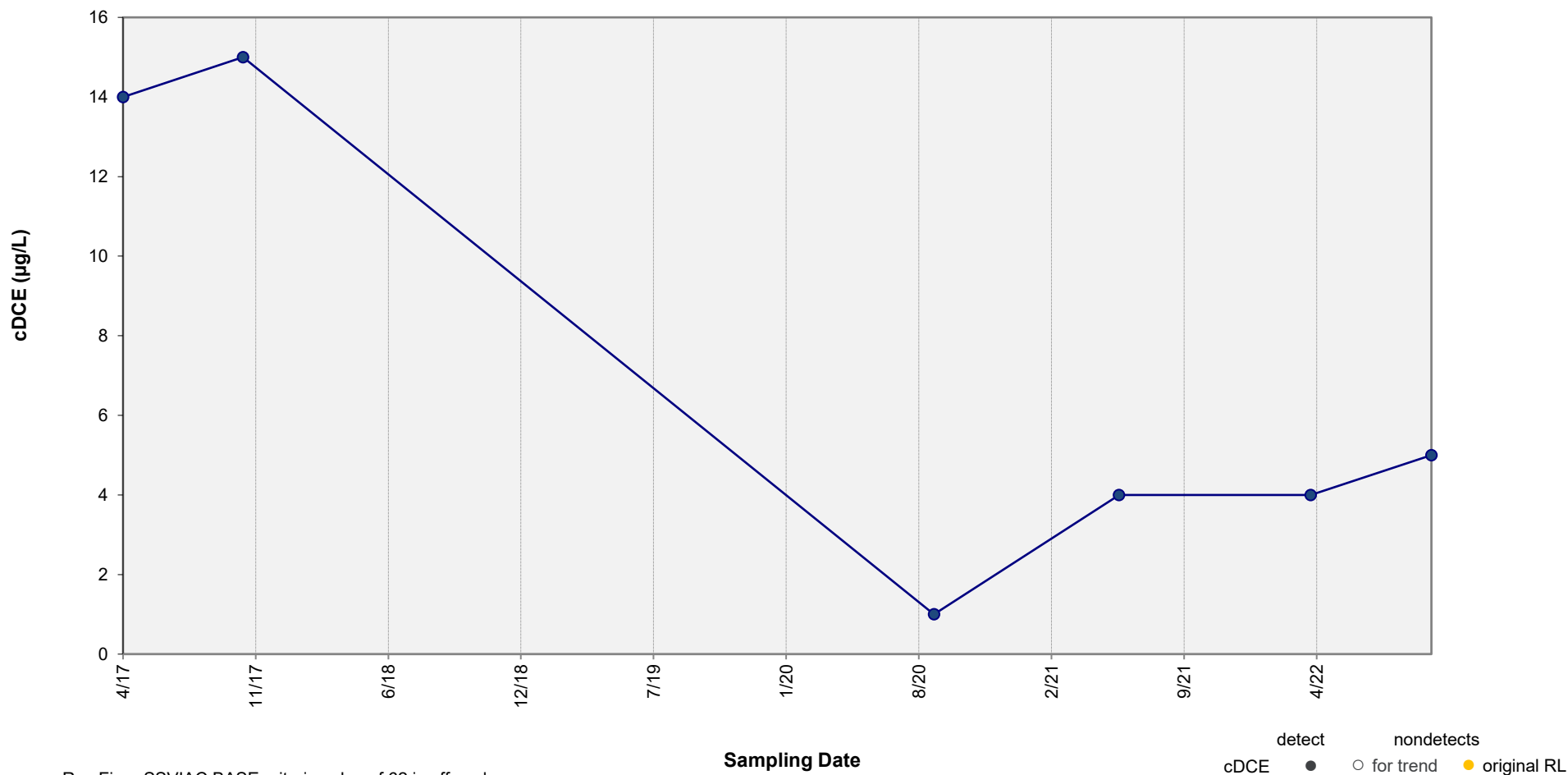
No trend

Median Slope Estimate = 5.6E-04 µg/L Per Day
95% Confidence Interval = 0.0E+00 to 2.7E-03 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MWF16-15
Racer PNC Stability Analysis

**FIGURE
D-17**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.430 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

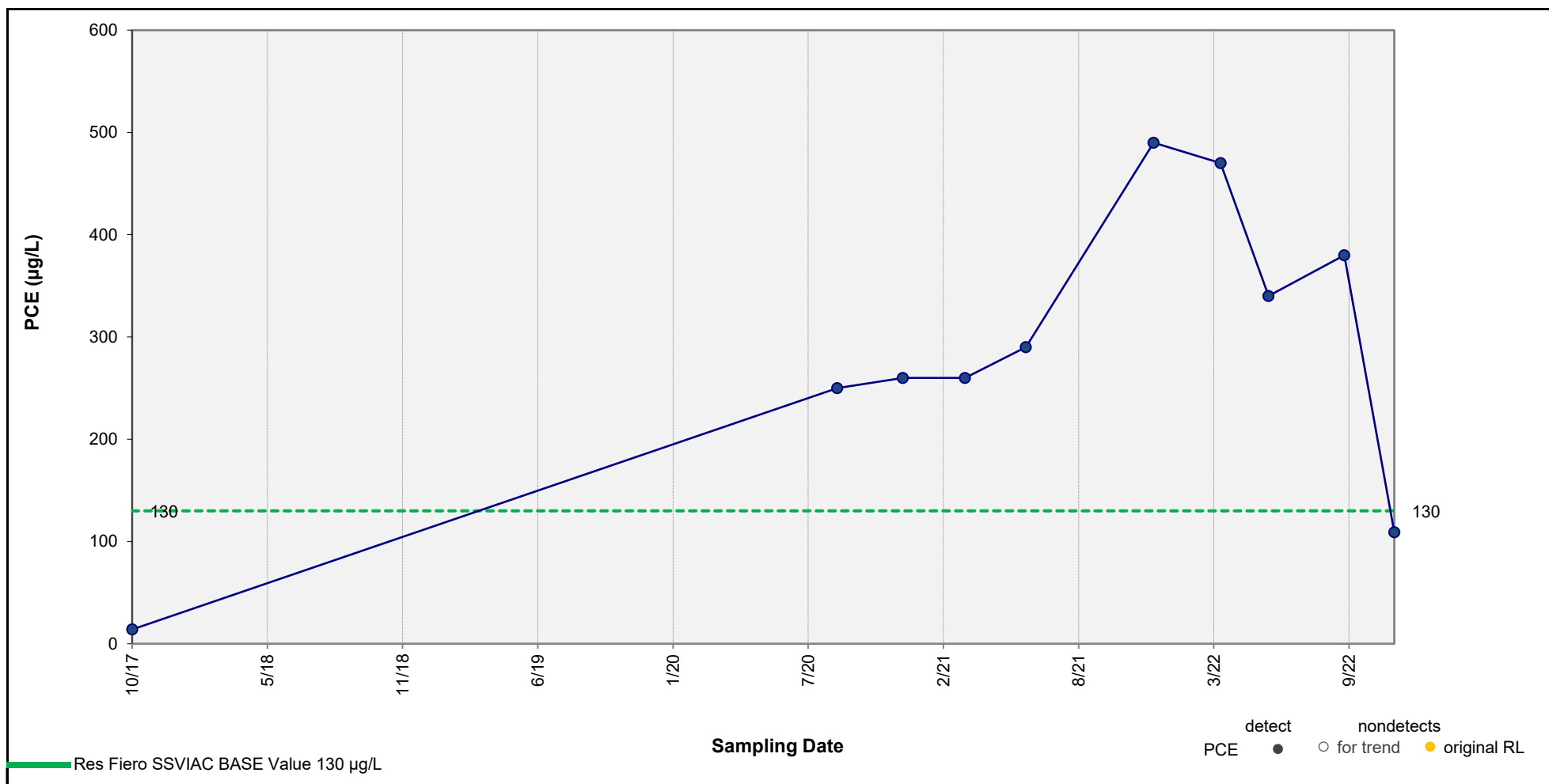
No Significant Trend

Median Slope Estimate = -4.6E-03 µg/L Per Day
 95% Confidence Interval = -8.0E-03 to 5.3E-03 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MWF16-15
 Racer PNC Stability Analysis

**FIGURE
D-18**



Results of Mann-Kendall Test for Trend:

INCREASING TREND

p value = 0.066 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

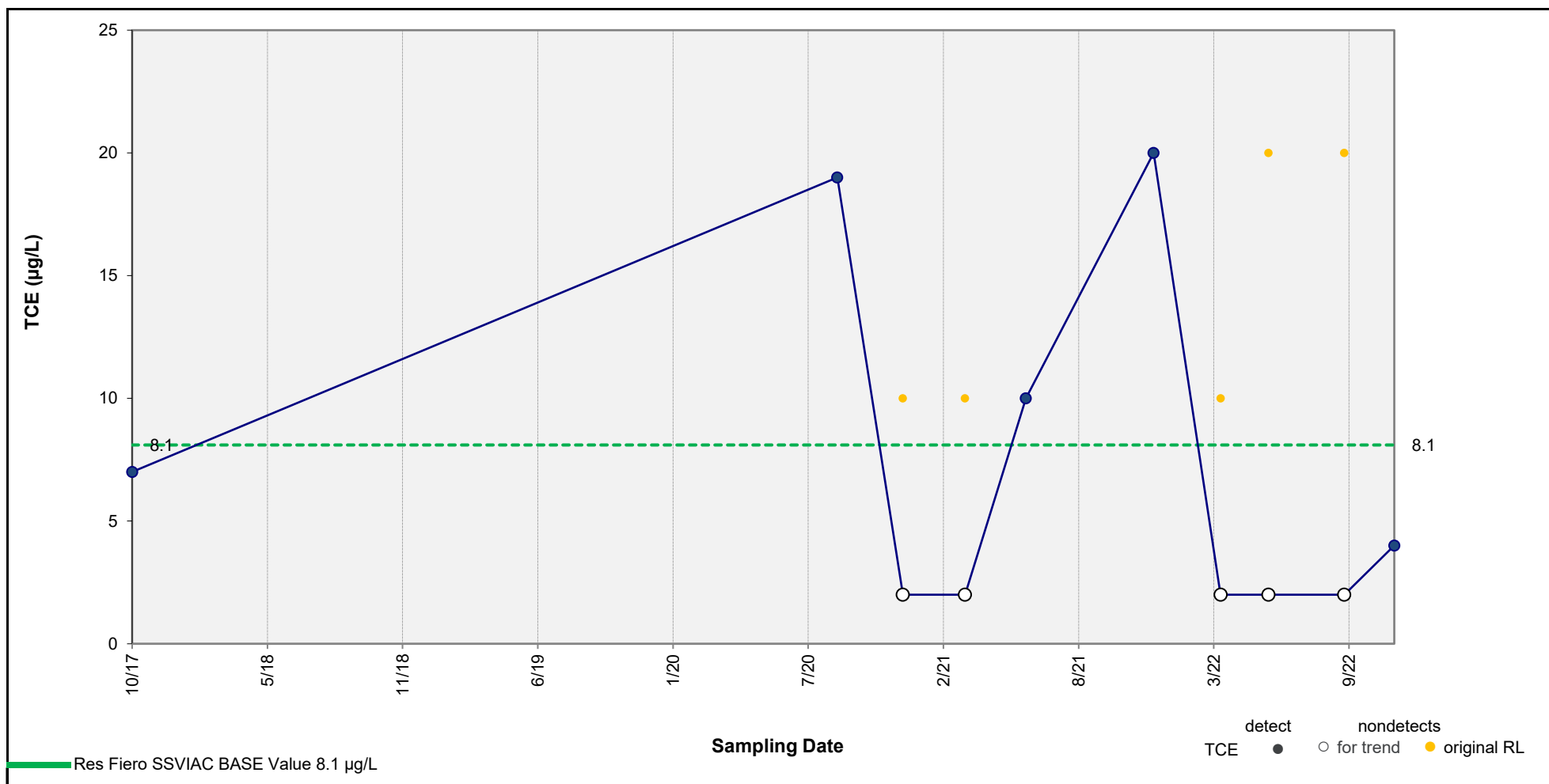
No Significant Trend

Median Slope Estimate = 1.7E-01 µg/L Per Day
95% Confidence Interval = -9.4E-02 to 2.1E-01 µg/L Per Day



Concentration vs. Time Plot – PCE in Well MWF16-16
Racer PNC Stability Analysis

FIGURE D-19



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.300 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

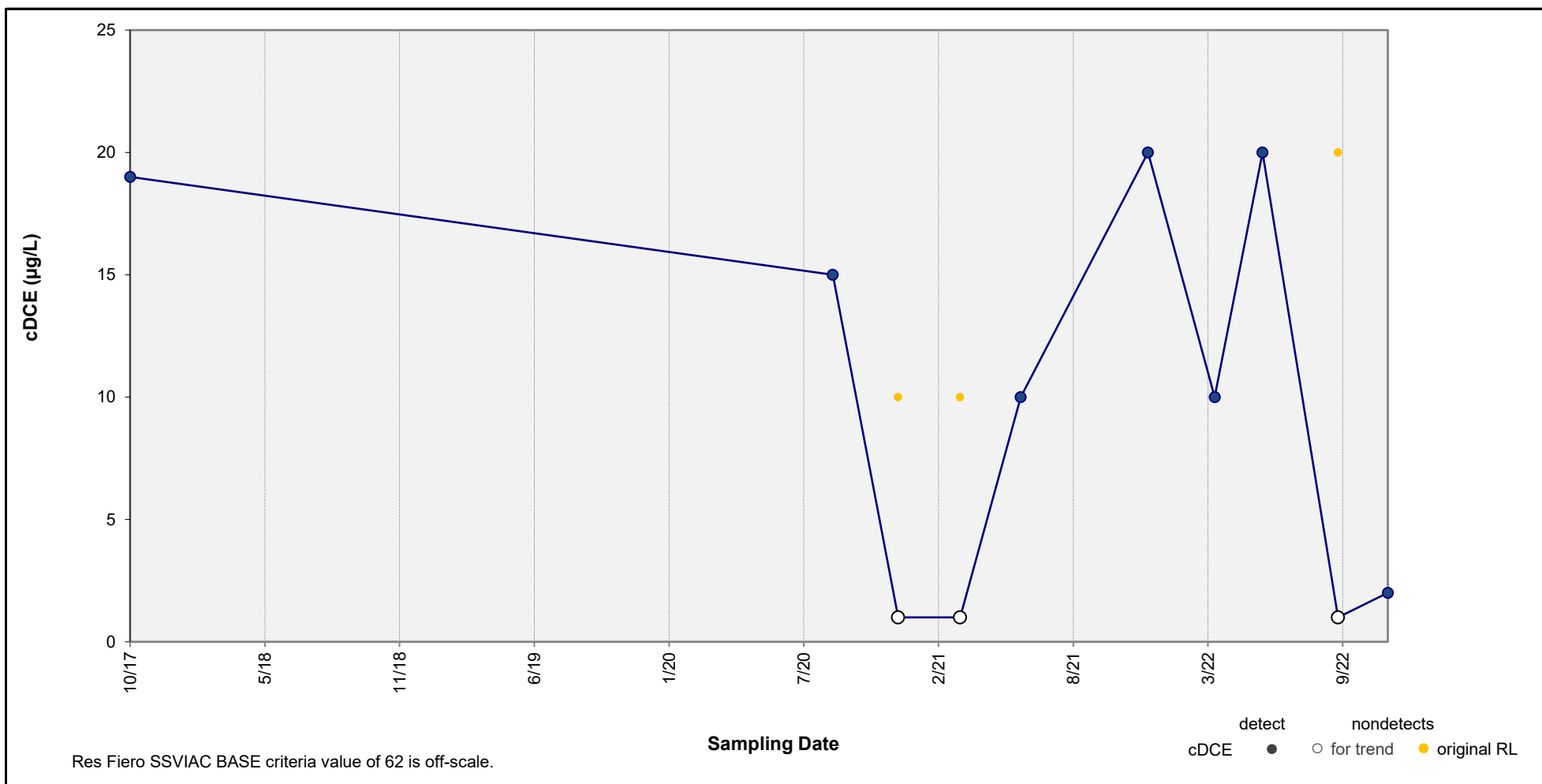
No trend

Median Slope Estimate = 0.0E+00 µg/L Per Day
95% Confidence Interval = -1.7E-02 to 0.0E+00 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MWF16-16
Racer PNC Stability Analysis

FIGURE D-20



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.398 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

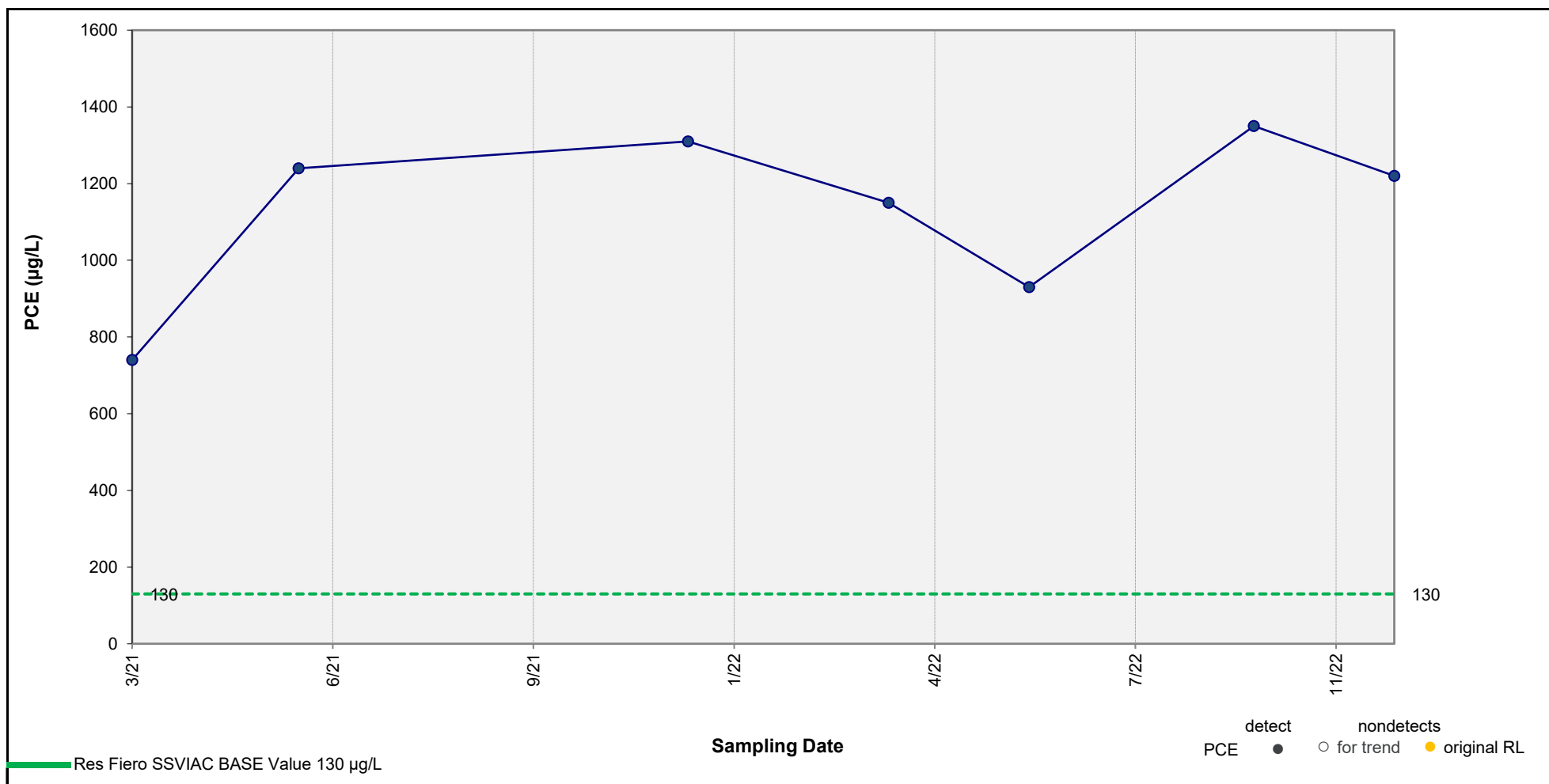
No Significant Trend

Median Slope Estimate = 0.0E+00 µg/L Per Day
 95% Confidence Interval = -1.6E-02 to 4.0E-03 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MWF16-16
 Racer PNC Stability Analysis

FIGURE D-21



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.281 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

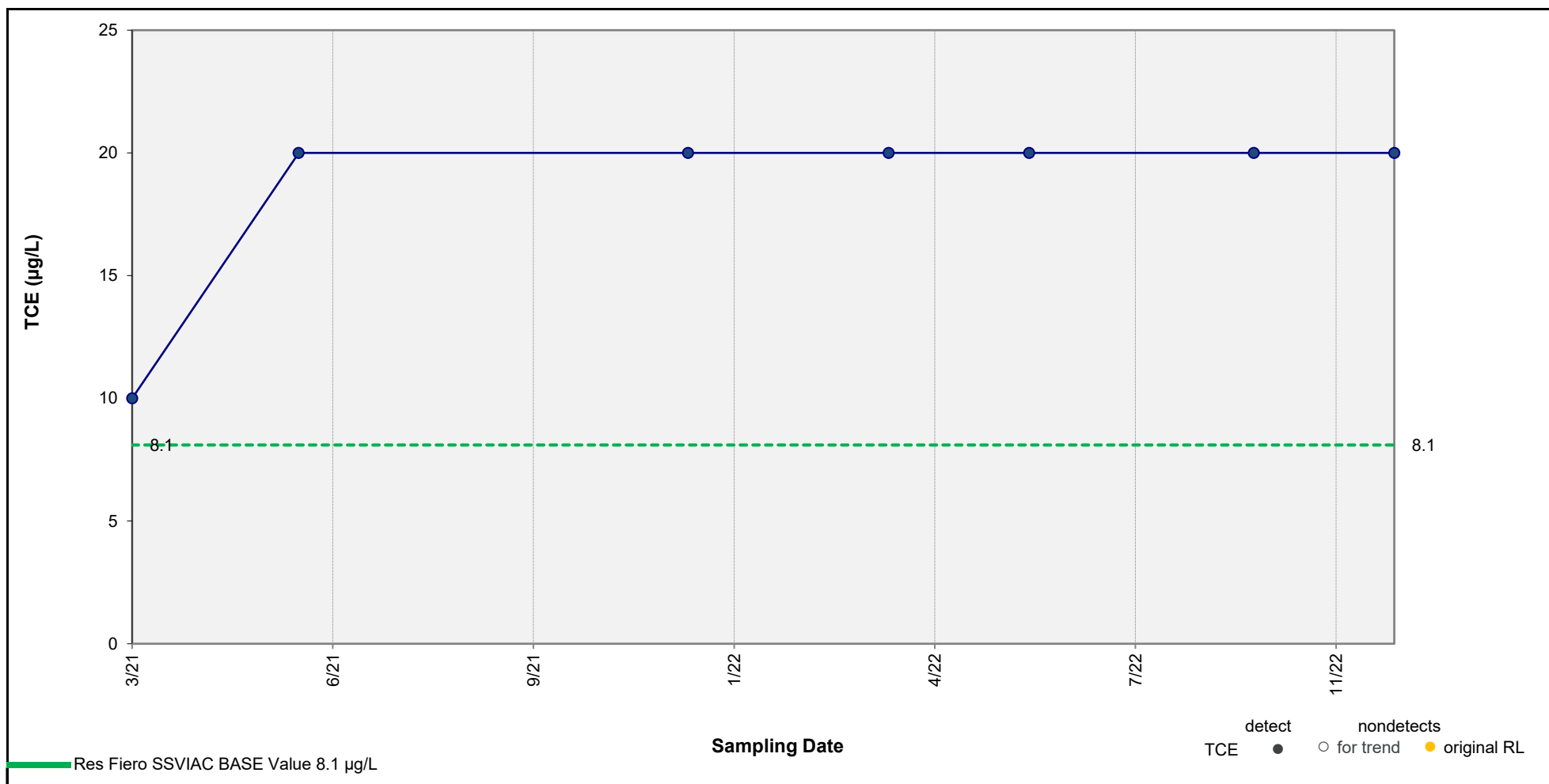
No Significant Trend

Median Slope Estimate = 2.8E-01 µg/L Per Day
95% Confidence Interval = -8.0E-01 to 1.1E+00 µg/L Per Day



Concentration vs. Time Plot – PCE in Well MWF16-18
Racer PNC Stability Analysis

**FIGURE
D-22**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.236 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

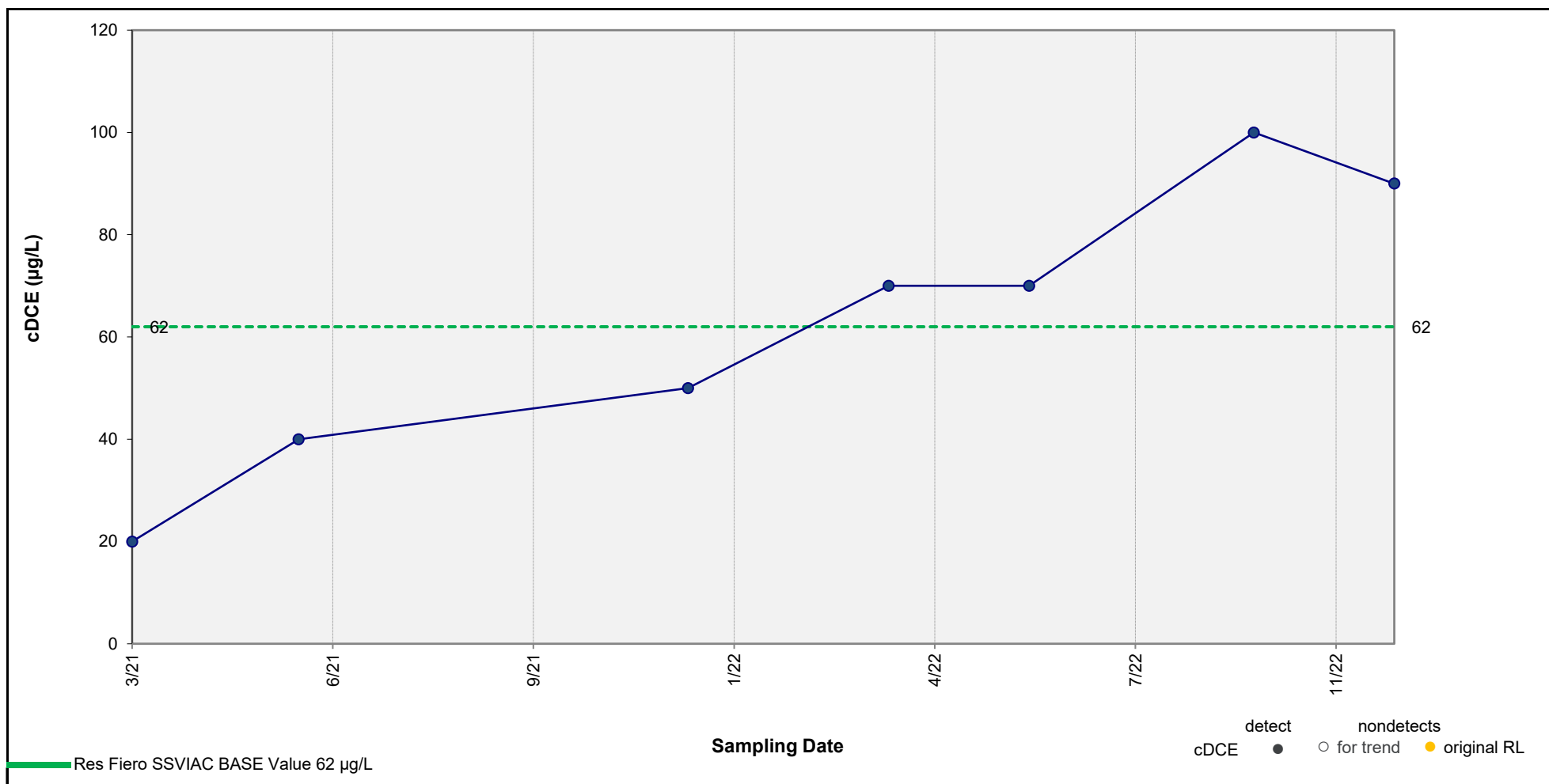
No trend

Median Slope Estimate = 0.0E+00 µg/L Per Day
 95% Confidence Interval = 0.0E+00 to 0.0E+00 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MWF16-18
 Racer PNC Stability Analysis

FIGURE D-23



Results of Mann-Kendall Test for Trend:

INCREASING TREND

p value = 0.003 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

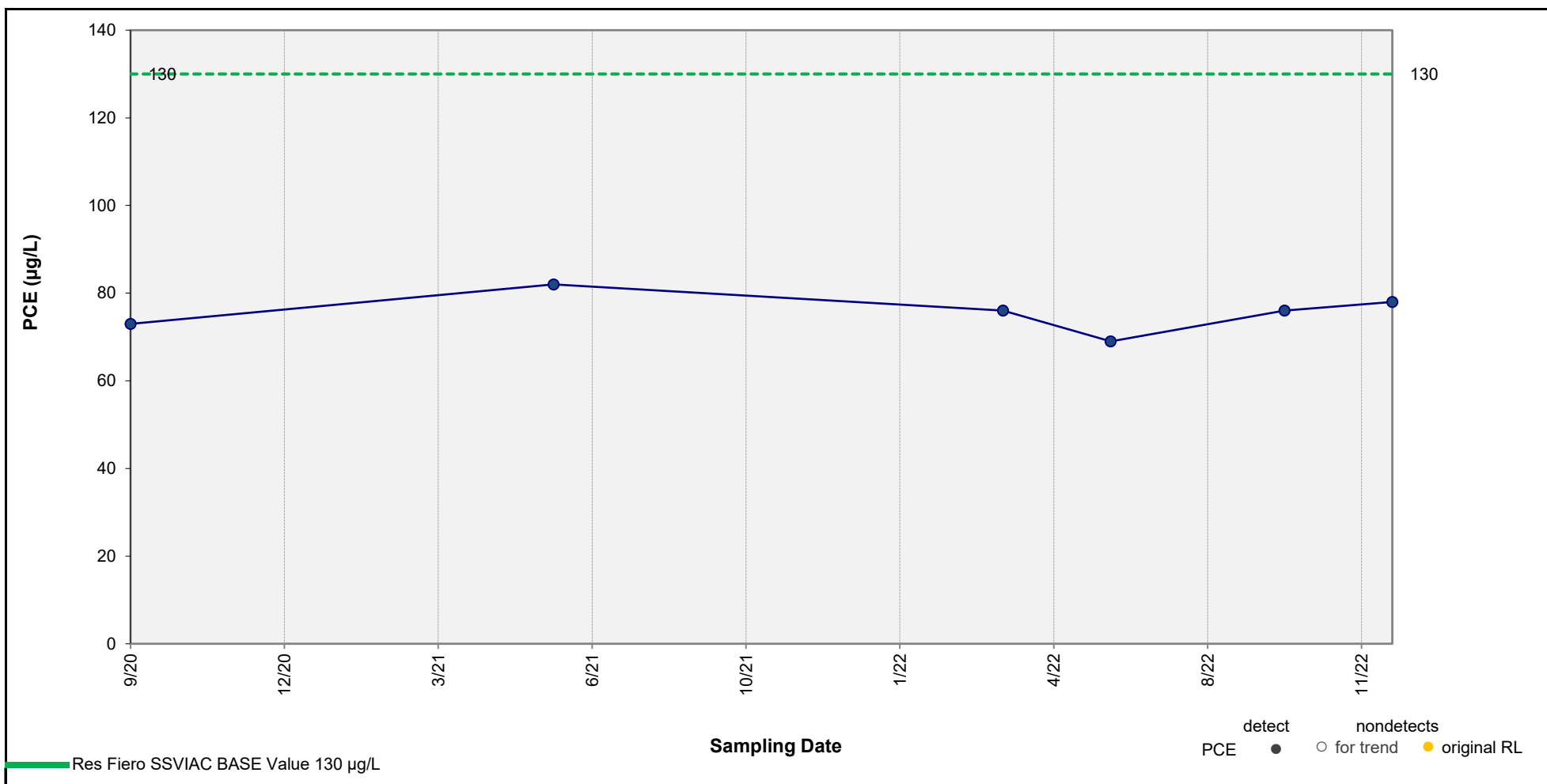
INCREASING TREND

Median Slope Estimate = 1.1E-01 µg/L Per Day
 95% Confidence Interval = 8.4E-02 to 1.4E-01 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MWF16-18
 Racer PNC Stability Analysis

**FIGURE
D-24**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.430 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

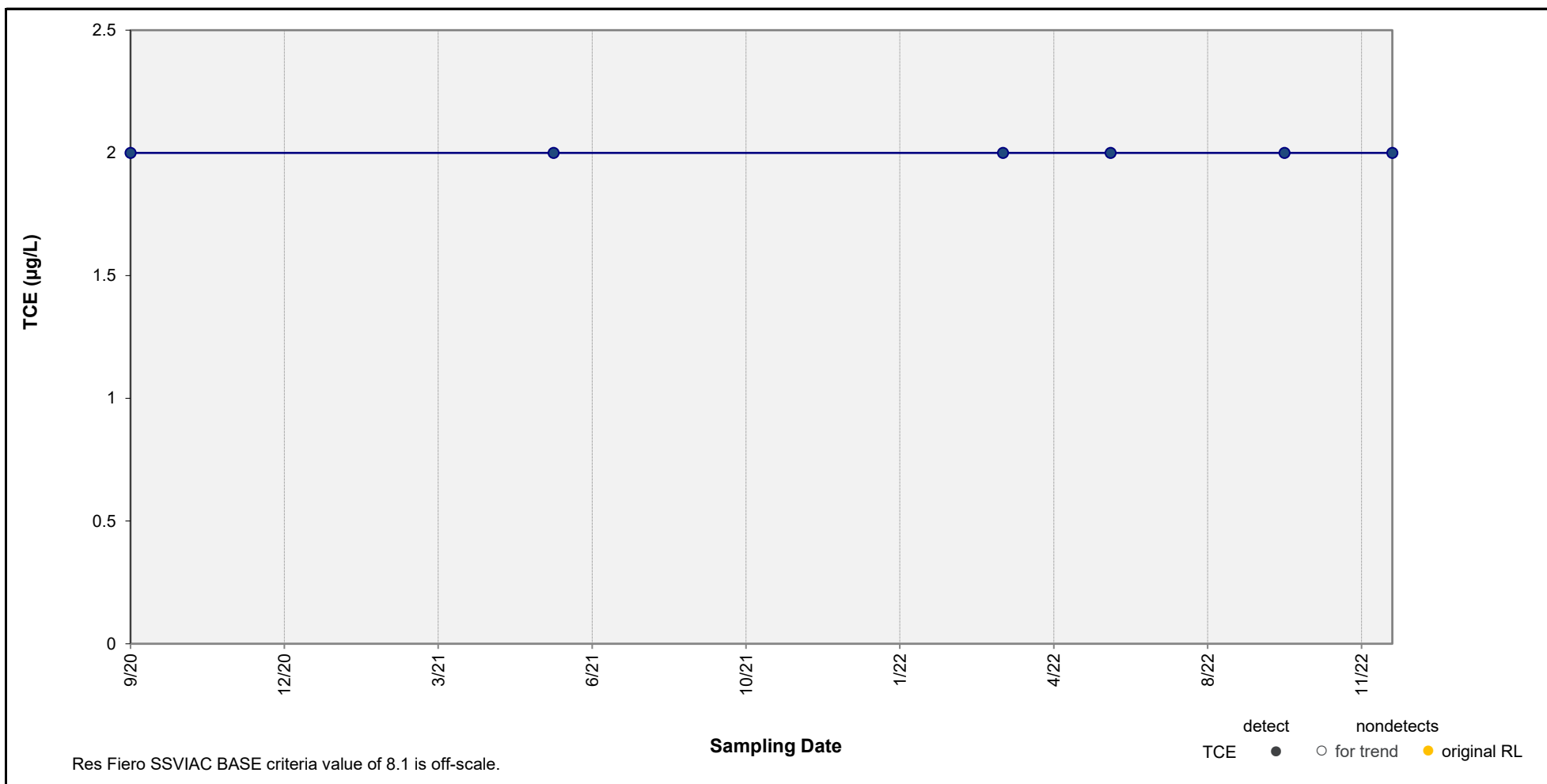
No Significant Trend

Median Slope Estimate = 4.0E-03 µg/L Per Day
 95% Confidence Interval = -1.9E-02 to 2.3E-02 µg/L Per Day



Concentration vs. Time Plot – PCE in Well MWF16-22
 Racer PNC Stability Analysis

**FIGURE
D-25**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.577 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

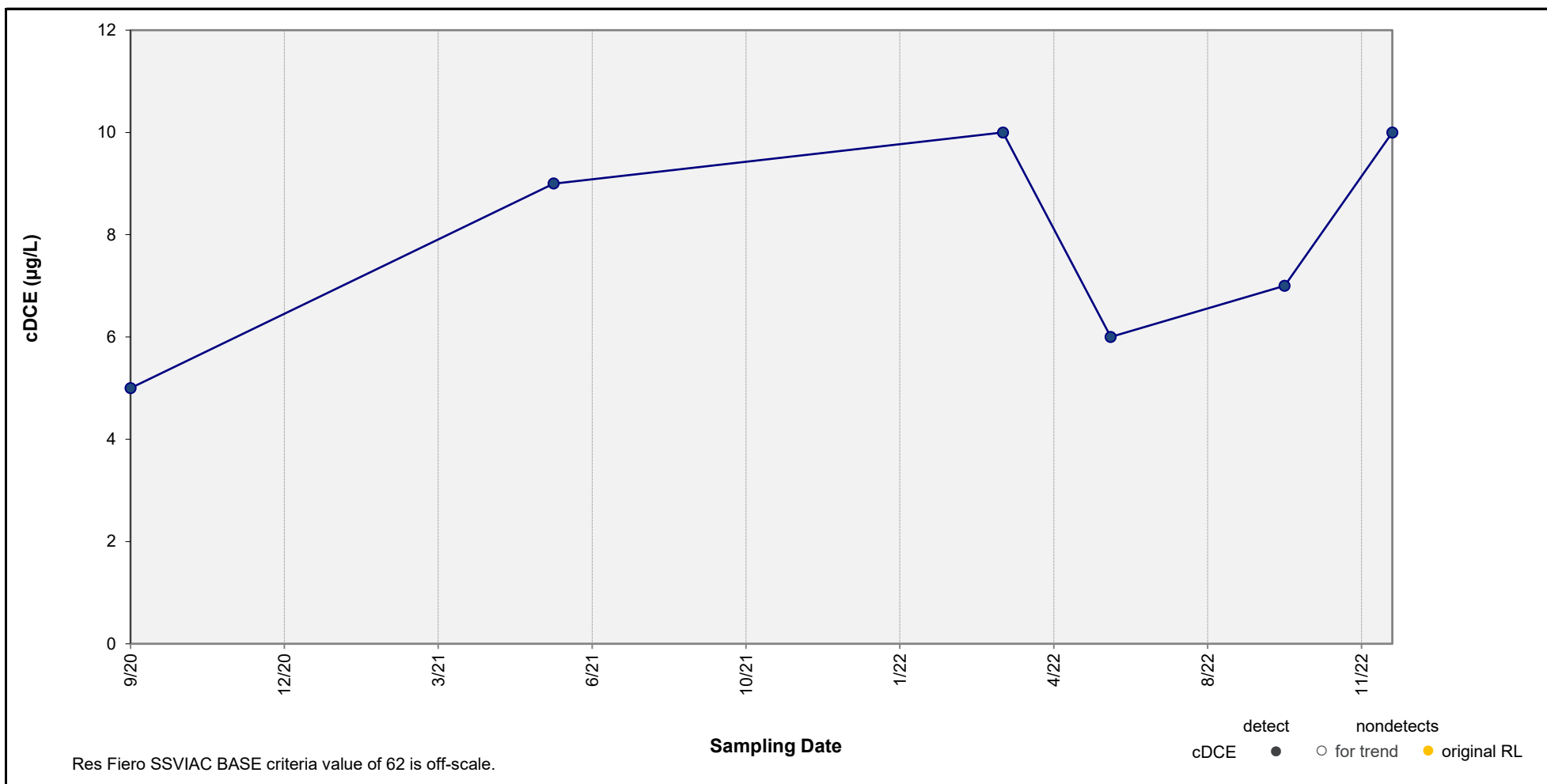
No trend

Median Slope Estimate = 0.0E+00 µg/L Per Day
 95% Confidence Interval = 0.0E+00 to 0.0E+00 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MWF16-22
 Racer PNC Stability Analysis

**FIGURE
D-26**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.186 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

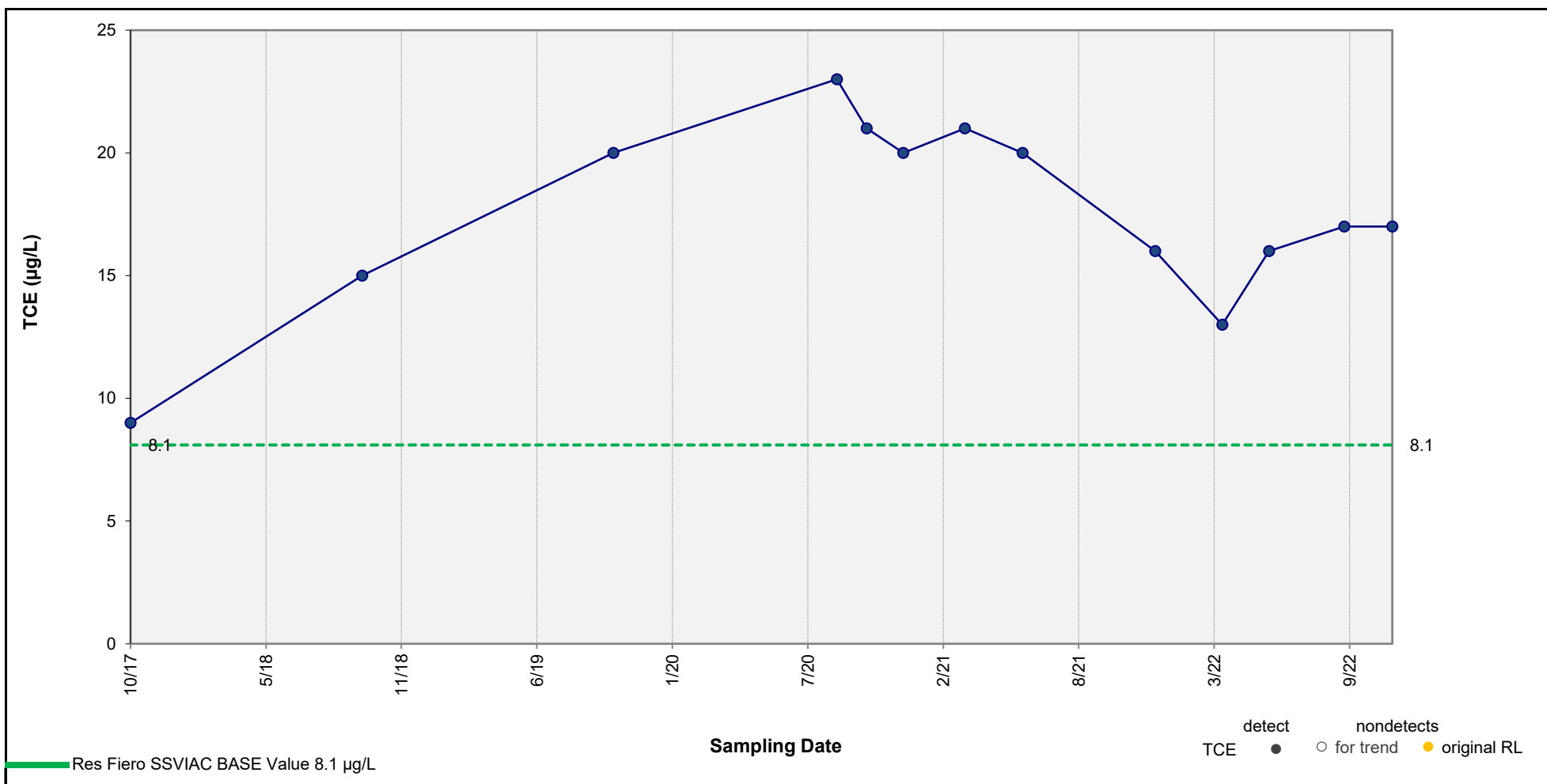
No Significant Trend

Median Slope Estimate = 2.7E-03 µg/L Per Day
 95% Confidence Interval = -7.3E-03 to 8.8E-03 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MWF16-22
 Racer PNC Stability Analysis

**FIGURE
D-27**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.379 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

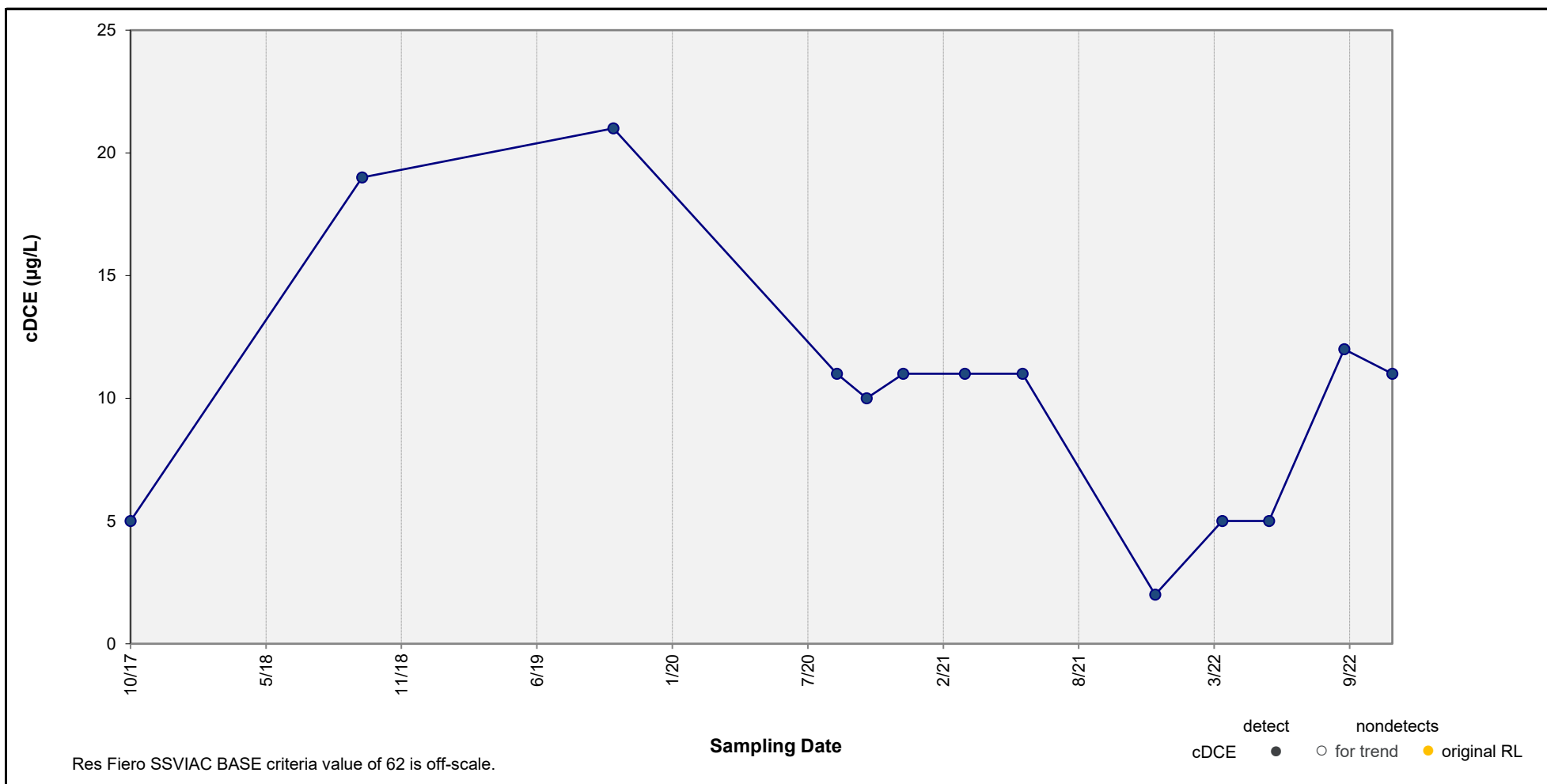
No Significant Trend

Median Slope Estimate = -7.9E-04 µg/L Per Day
95% Confidence Interval = -7.2E-03 to 2.7E-03 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MWF16-23
Racer PNC Stability Analysis

**FIGURE
D-28**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.263 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

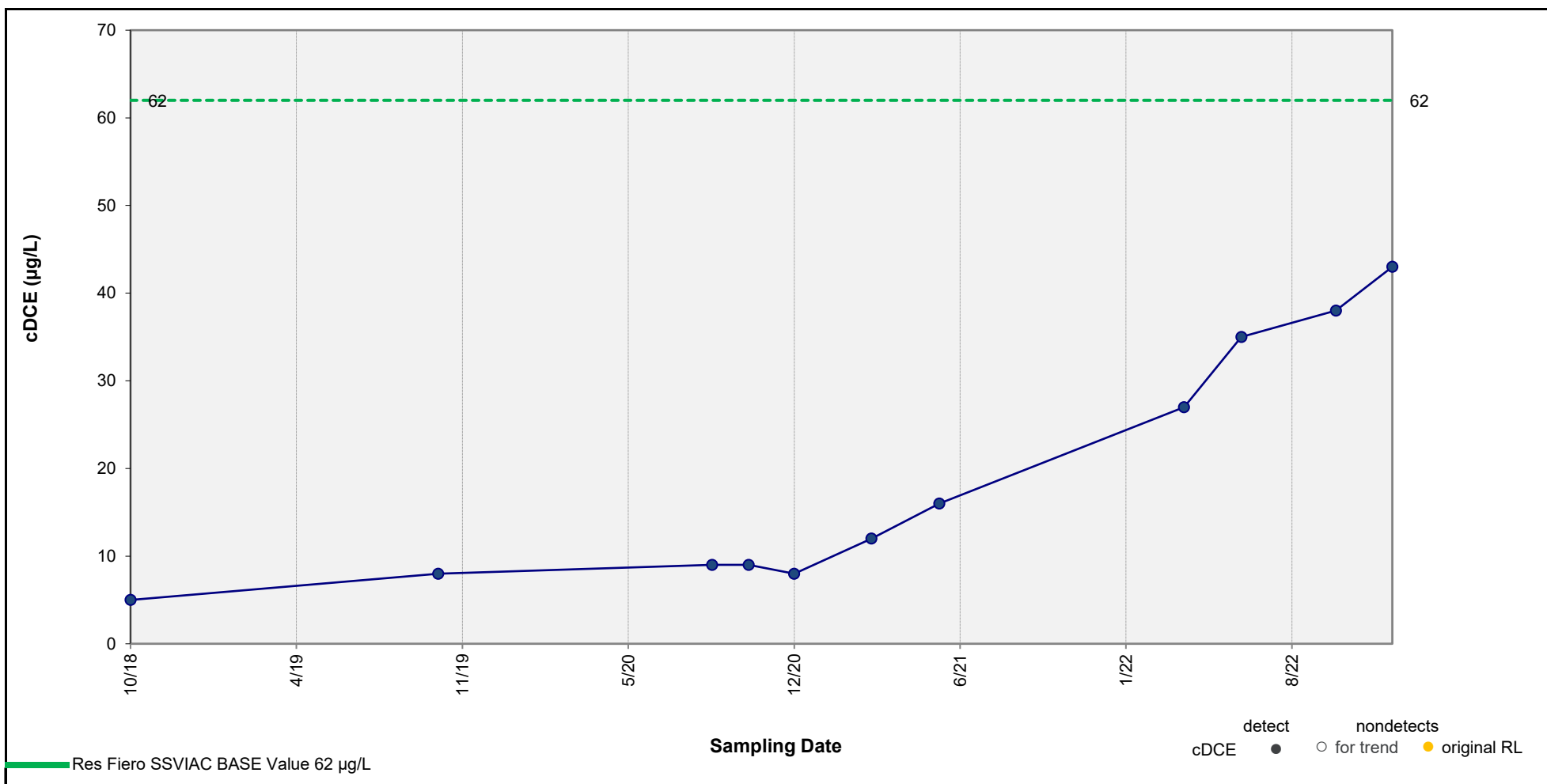
No Significant Trend

Median Slope Estimate = 0.0E+00 µg/L Per Day
 95% Confidence Interval = -1.1E-02 to 1.0E-03 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MWF16-23
 Racer PNC Stability Analysis

**FIGURE
D-29**



Results of Mann-Kendall Test for Trend:

INCREASING TREND

p value = Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

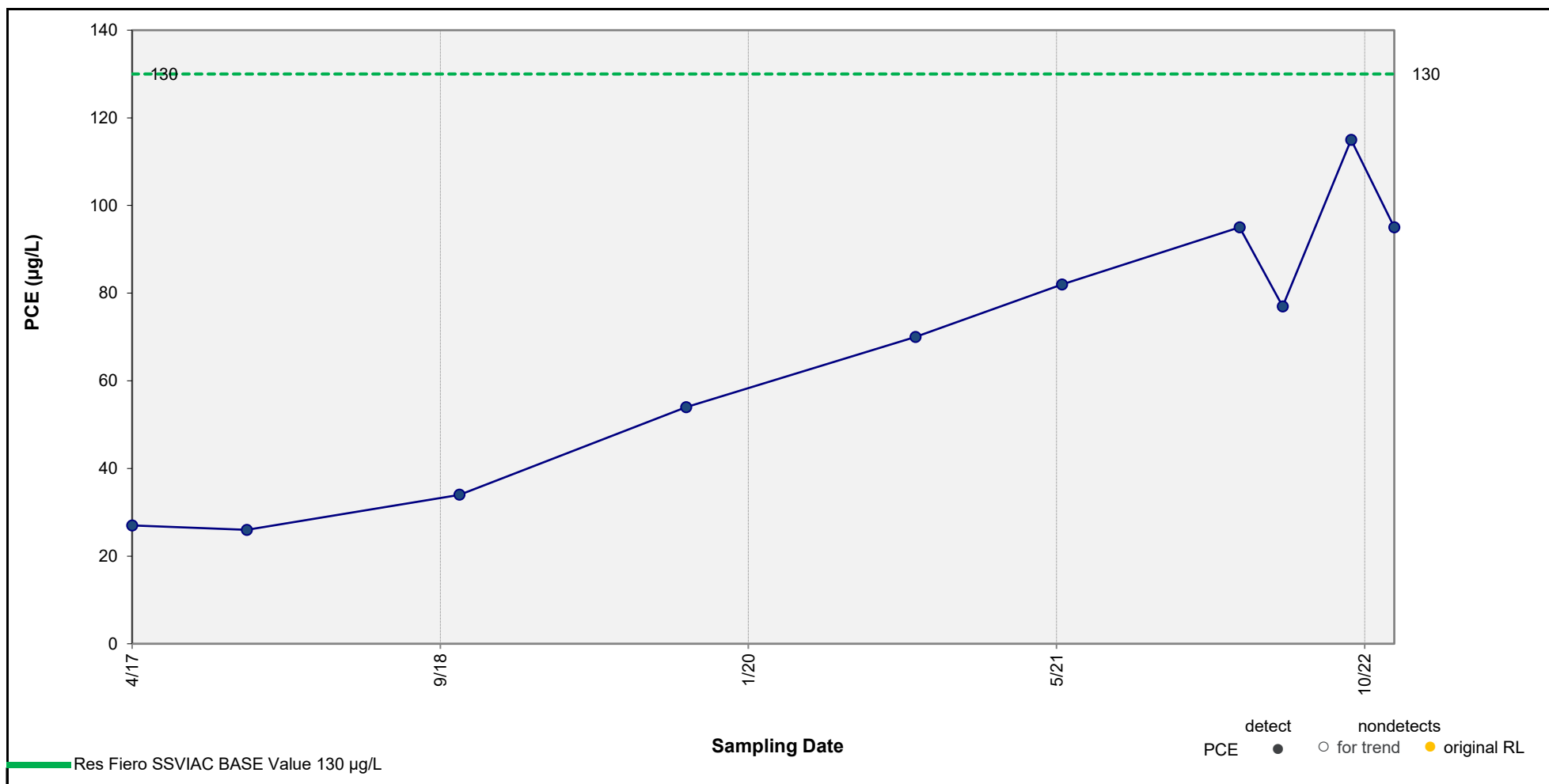
INCREASING TREND

Median Slope Estimate = µg/L Per Day
 95% Confidence Interval = to µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MWF16-25
 Racer PNC Stability Analysis

**FIGURE
D-30**



Results of Mann-Kendall Test for Trend:

INCREASING TREND

p value = Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

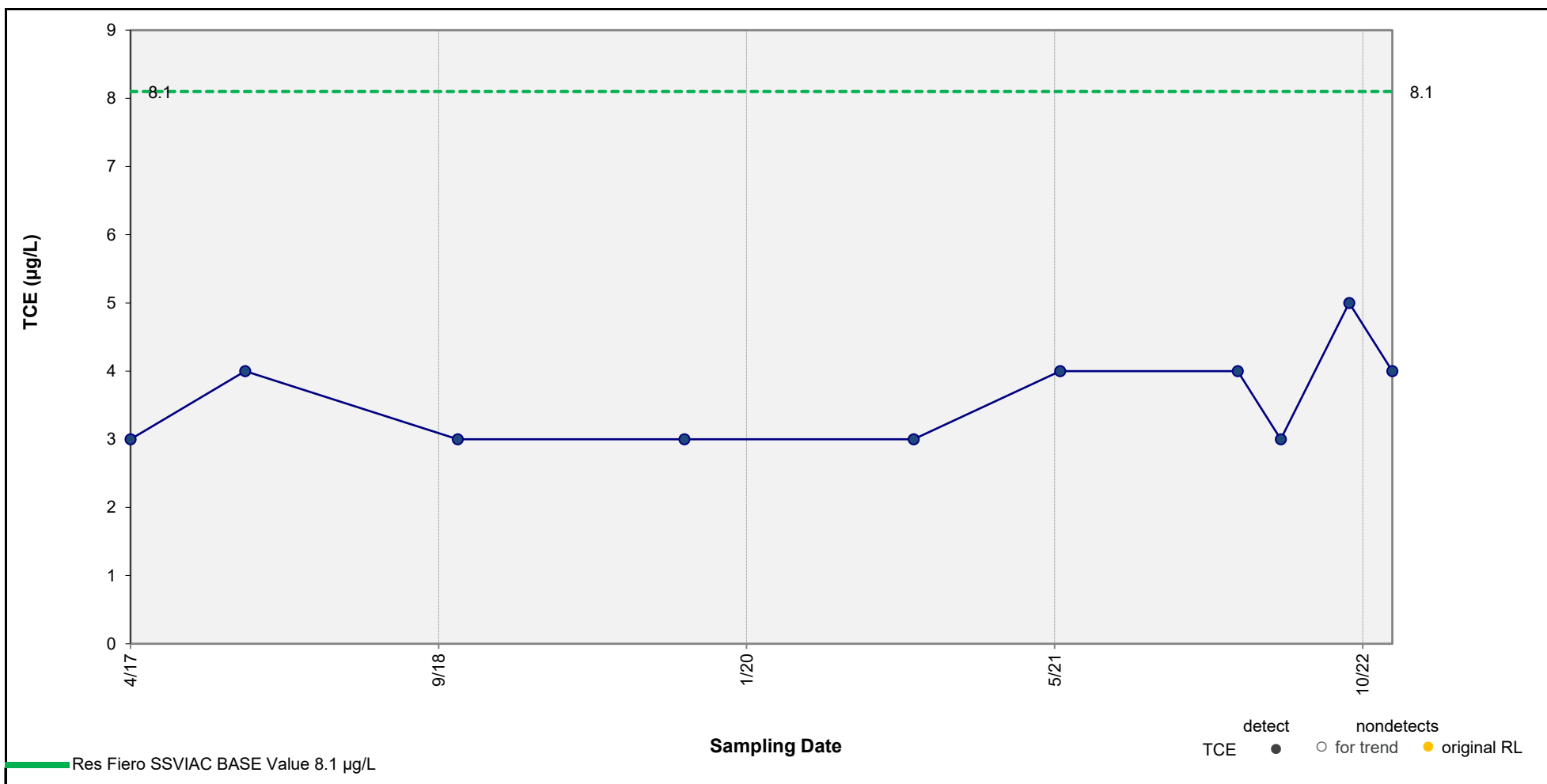
INCREASING TREND

Median Slope Estimate = µg/L Per Day
 95% Confidence Interval = to µg/L Per Day



Concentration vs. Time Plot – PCE in Well MWF7-02
 Racer PNC Stability Analysis

**FIGURE
D-31**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.108 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

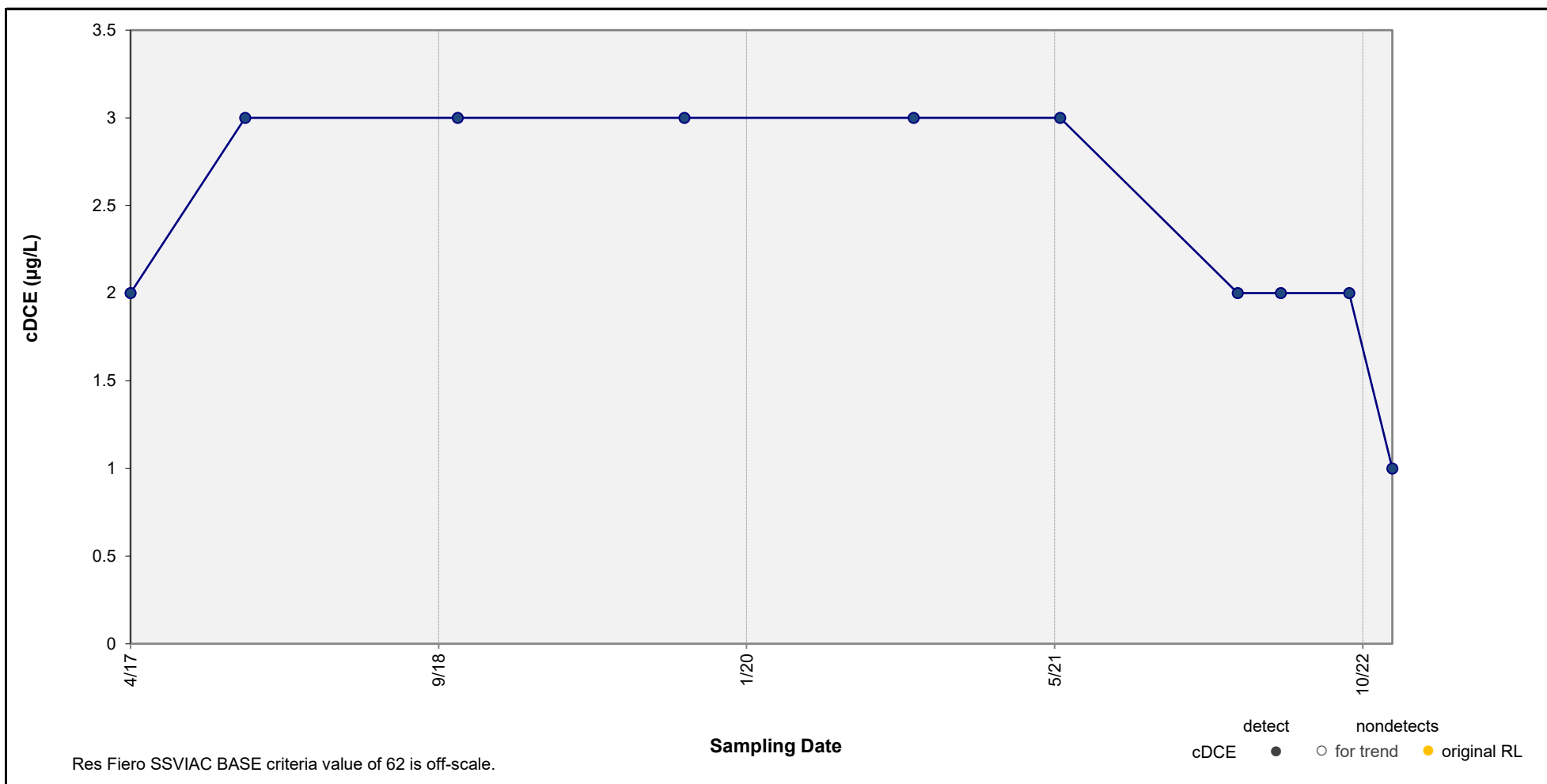
No trend

Median Slope Estimate = 0.0E+00 µg/L Per Day
95% Confidence Interval = 0.0E+00 to 9.6E-04 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MWF7-02
Racer PNC Stability Analysis

**FIGURE
D-32**



Results of Mann-Kendall Test for Trend:

DECREASING TREND

p value = Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

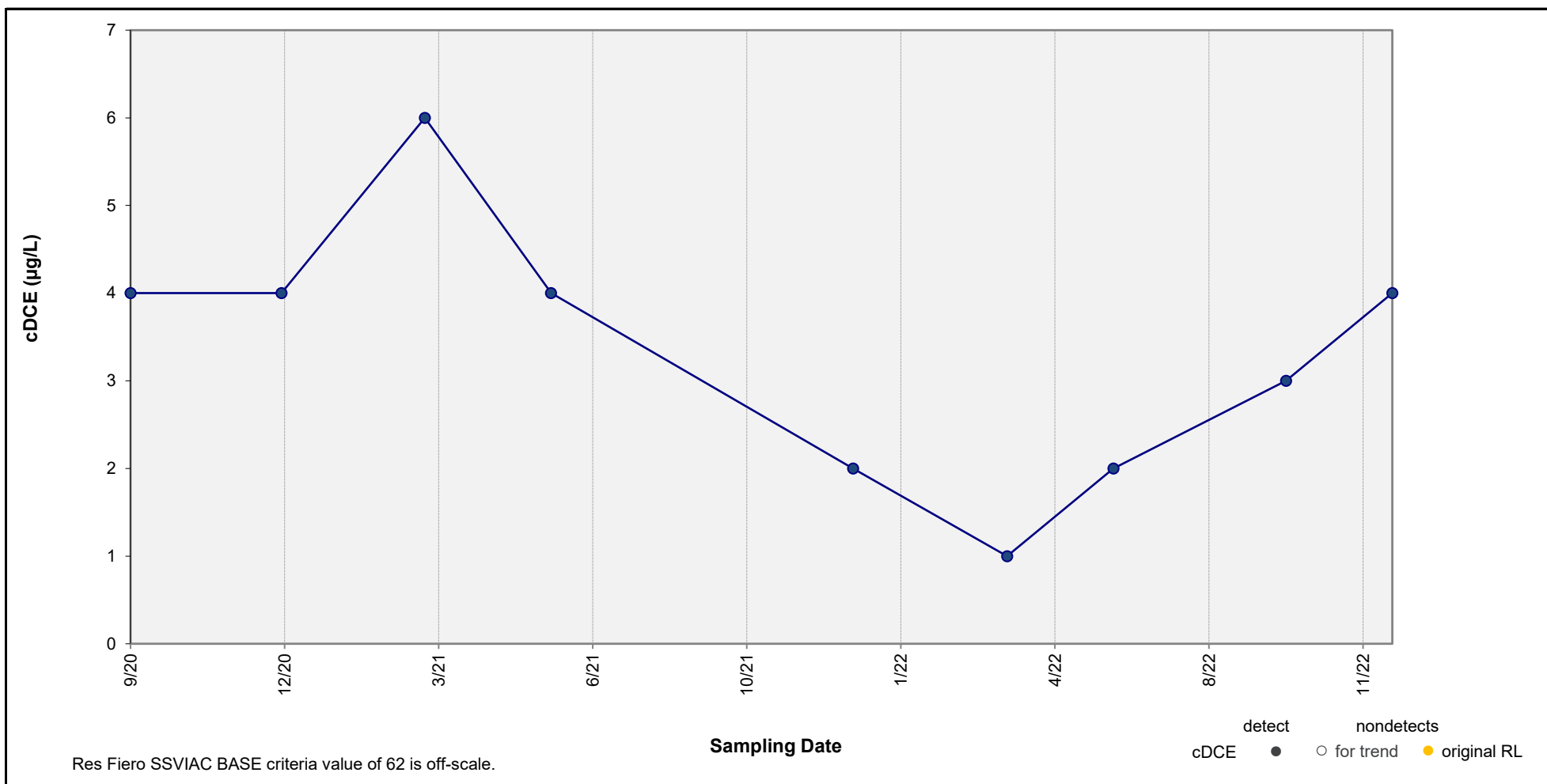
No trend

Median Slope Estimate = µg/L Per Day
 95% Confidence Interval = to µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MWF7-02
 Racer PNC Stability Analysis

**FIGURE
D-33**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.209 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

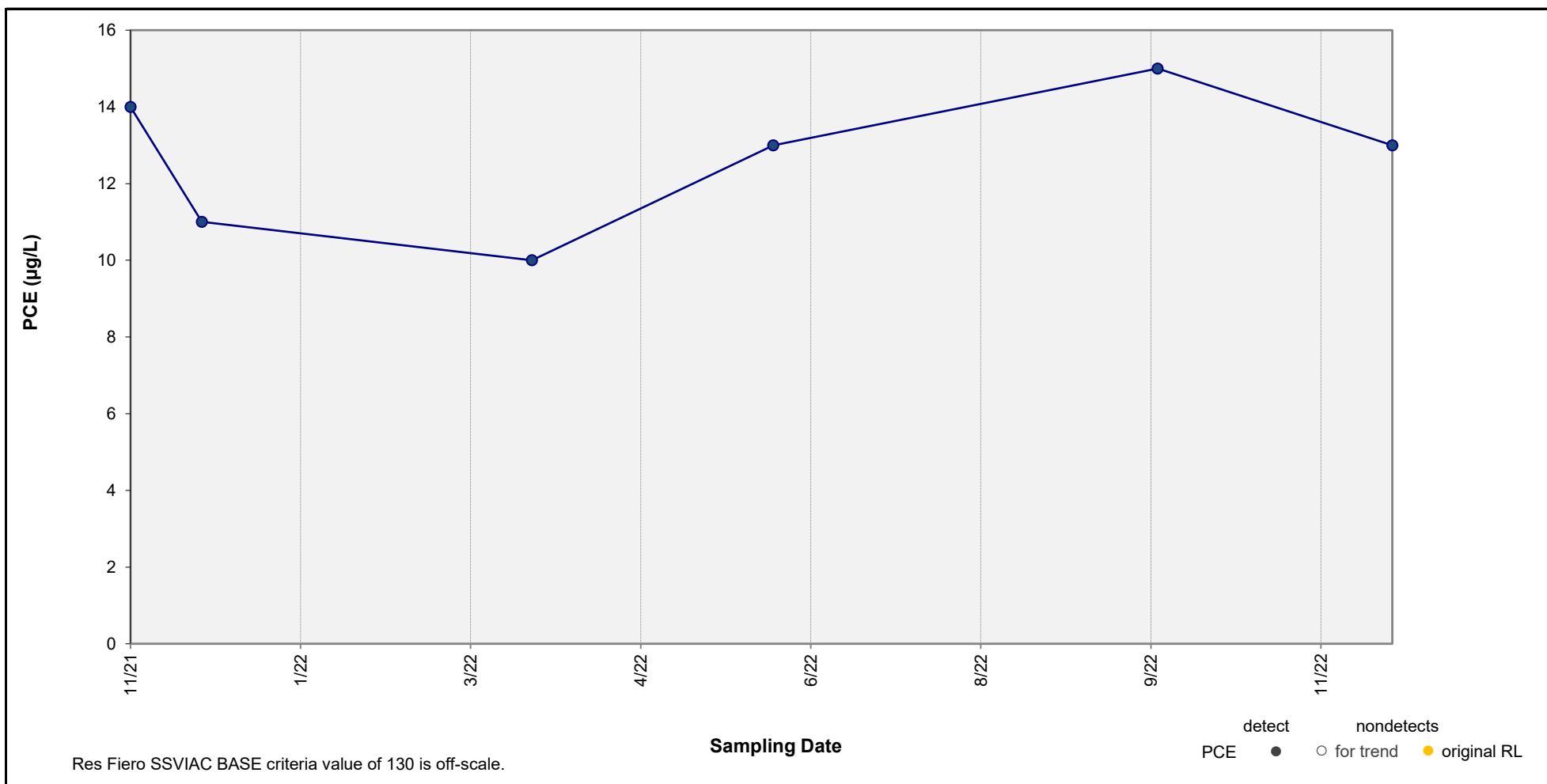
No trend

Median Slope Estimate = -1.4E-03 µg/L Per Day
 95% Confidence Interval = -5.4E-03 to 0.0E+00 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MWOS-08
 Racer PNC Stability Analysis

**FIGURE
D-34**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.430 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

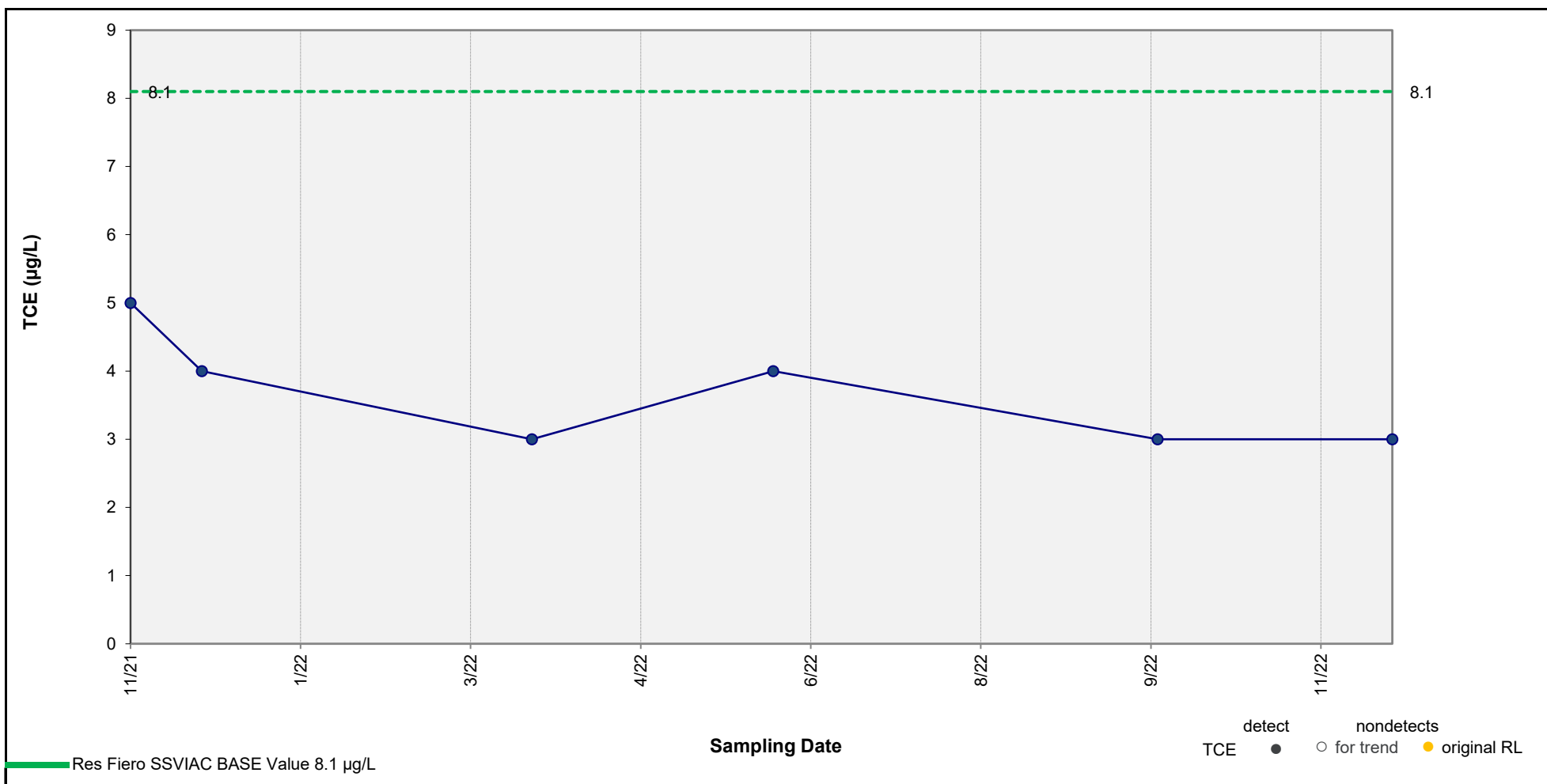
No Significant Trend

Median Slope Estimate = 3.3E-03 µg/L Per Day
 95% Confidence Interval = -2.4E-02 to 1.4E-02 µg/L Per Day



Concentration vs. Time Plot – PCE in Well MWOS-09R
 Racer PNC Stability Analysis

**FIGURE
D-35**



Results of Mann-Kendall Test for Trend:

DECREASING TREND

p value = 0.068 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

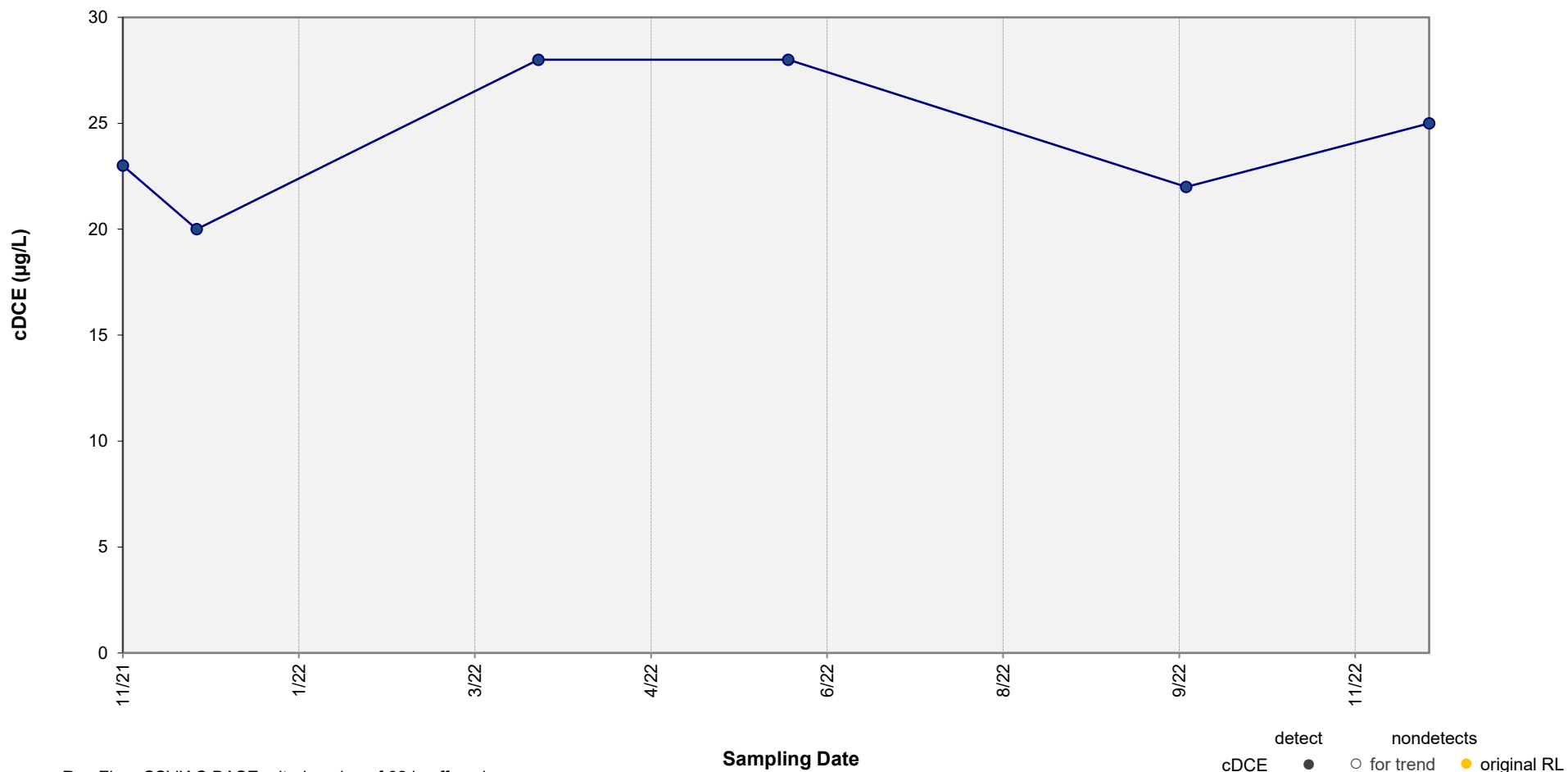
No trend

Median Slope Estimate = -5.3E-03 µg/L Per Day
 95% Confidence Interval = -9.5E-03 to 0.0E+00 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MWOS-09R
 Racer PNC Stability Analysis

**FIGURE
D-36**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.430 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

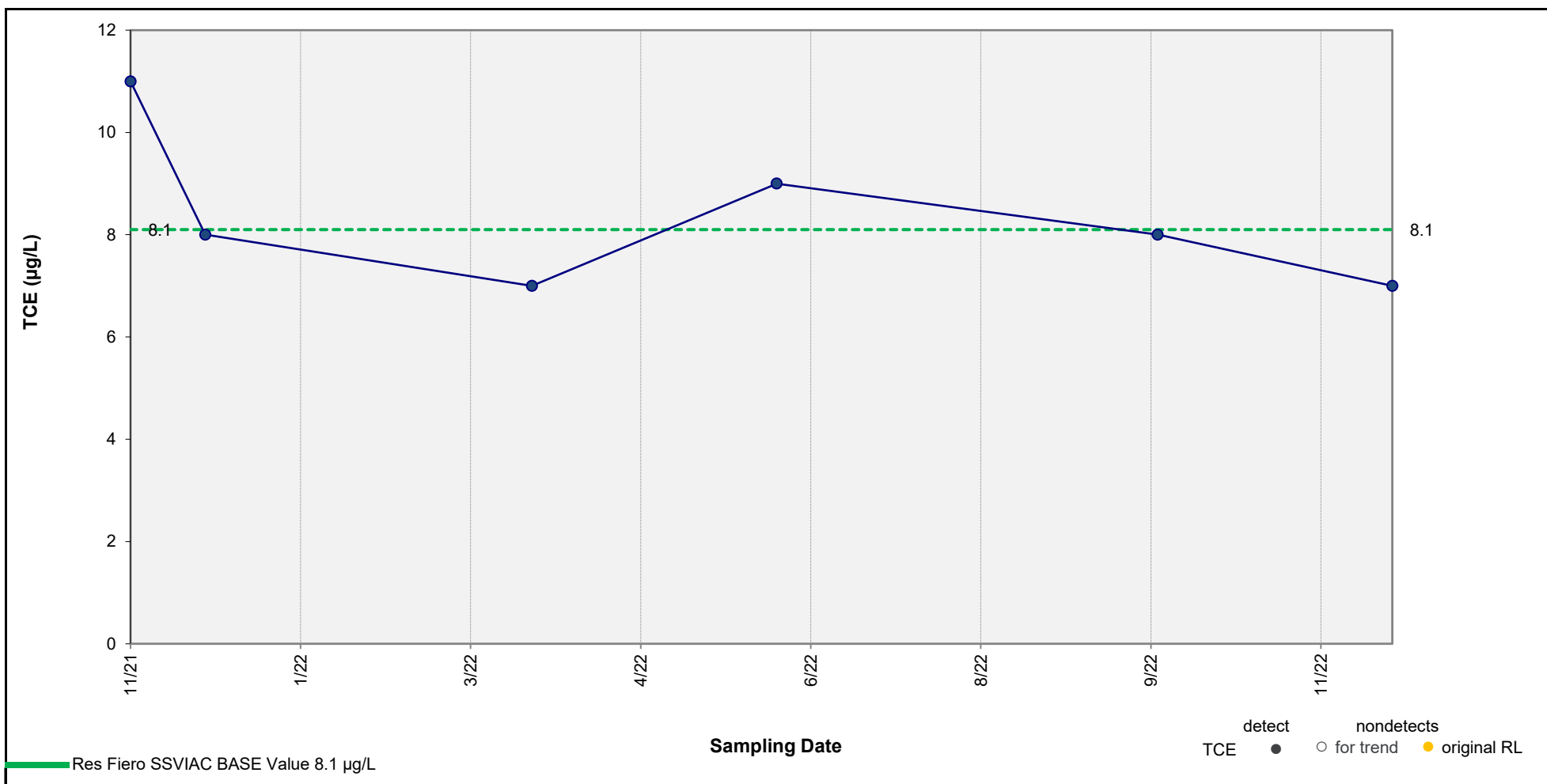
No Significant Trend

Median Slope Estimate = 5.4E-03 µg/L Per Day
 95% Confidence Interval = -2.9E-02 to 3.8E-02 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MWOS-09R
 Racer PNC Stability Analysis

**FIGURE
D-37**



Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.136 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

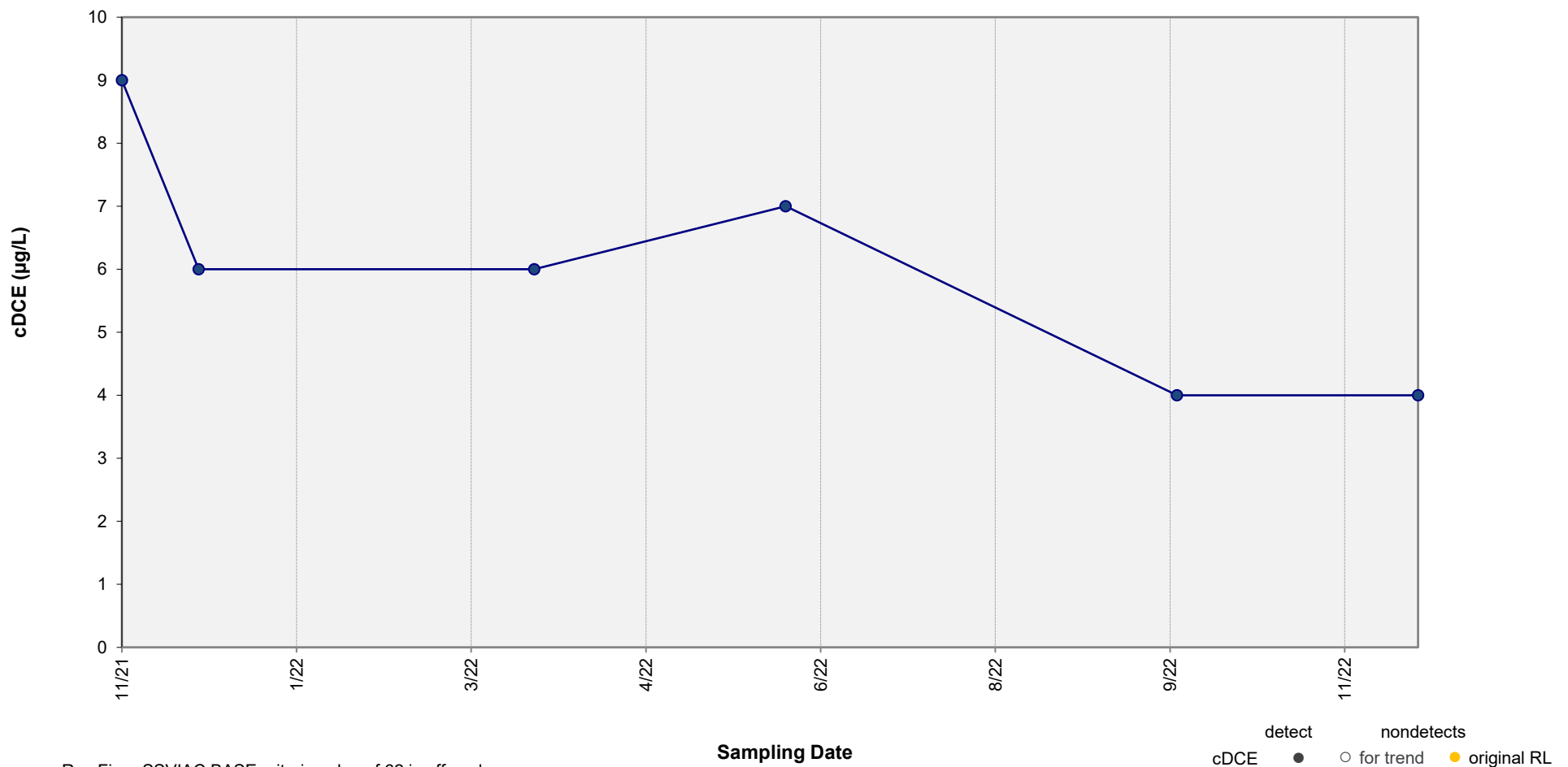
No trend

Median Slope Estimate = -9.9E-03 µg/L Per Day
 95% Confidence Interval = -1.3E-02 to 0.0E+00 µg/L Per Day



Concentration vs. Time Plot – TCE in Well MWOS-10
 Racer PNC Stability Analysis

**FIGURE
D-38**



Results of Mann-Kendall Test for Trend:

DECREASING TREND

p value = 0.068 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

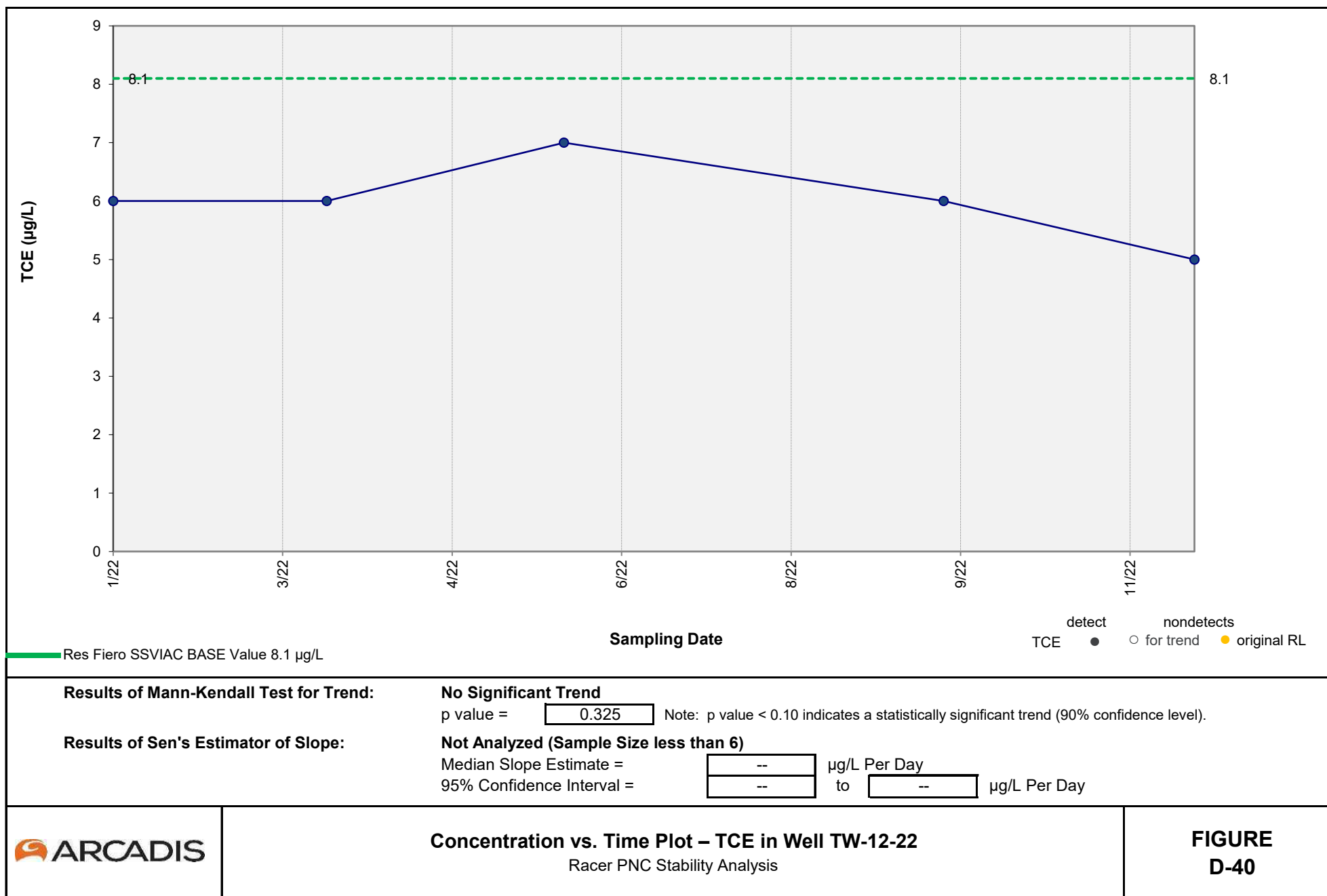
DECREASING TREND

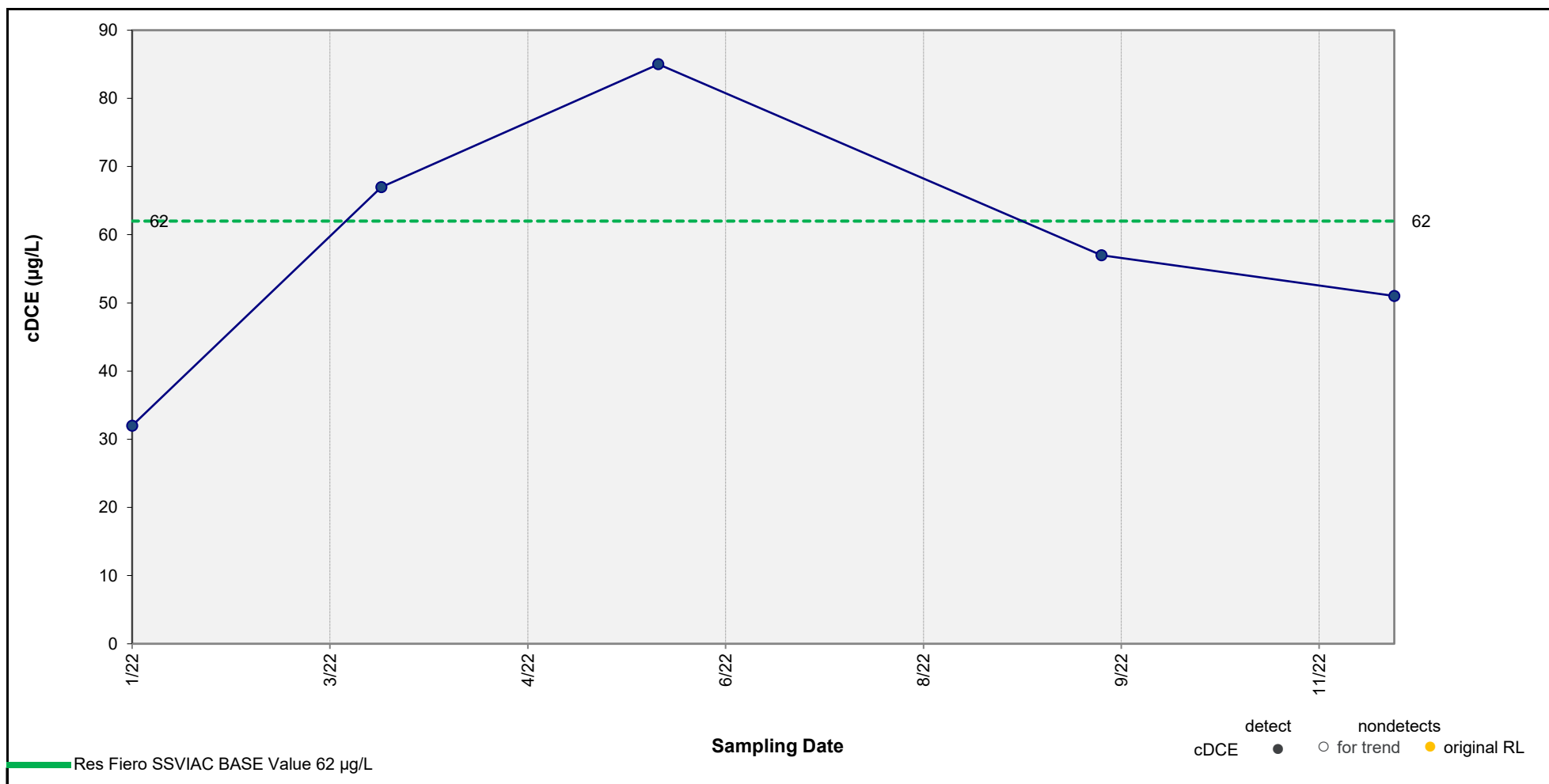
Median Slope Estimate = -1.1E-02 µg/L Per Day
 95% Confidence Interval = -2.3E-02 to -1.9E-03 µg/L Per Day



Concentration vs. Time Plot – cDCE in Well MWOS-10
 Racer PNC Stability Analysis

**FIGURE
D-39**





Results of Mann-Kendall Test for Trend:

No Significant Trend

p value = 0.592 Note: p value < 0.10 indicates a statistically significant trend (90% confidence level).

Results of Sen's Estimator of Slope:

Not Analyzed (Sample Size less than 6)

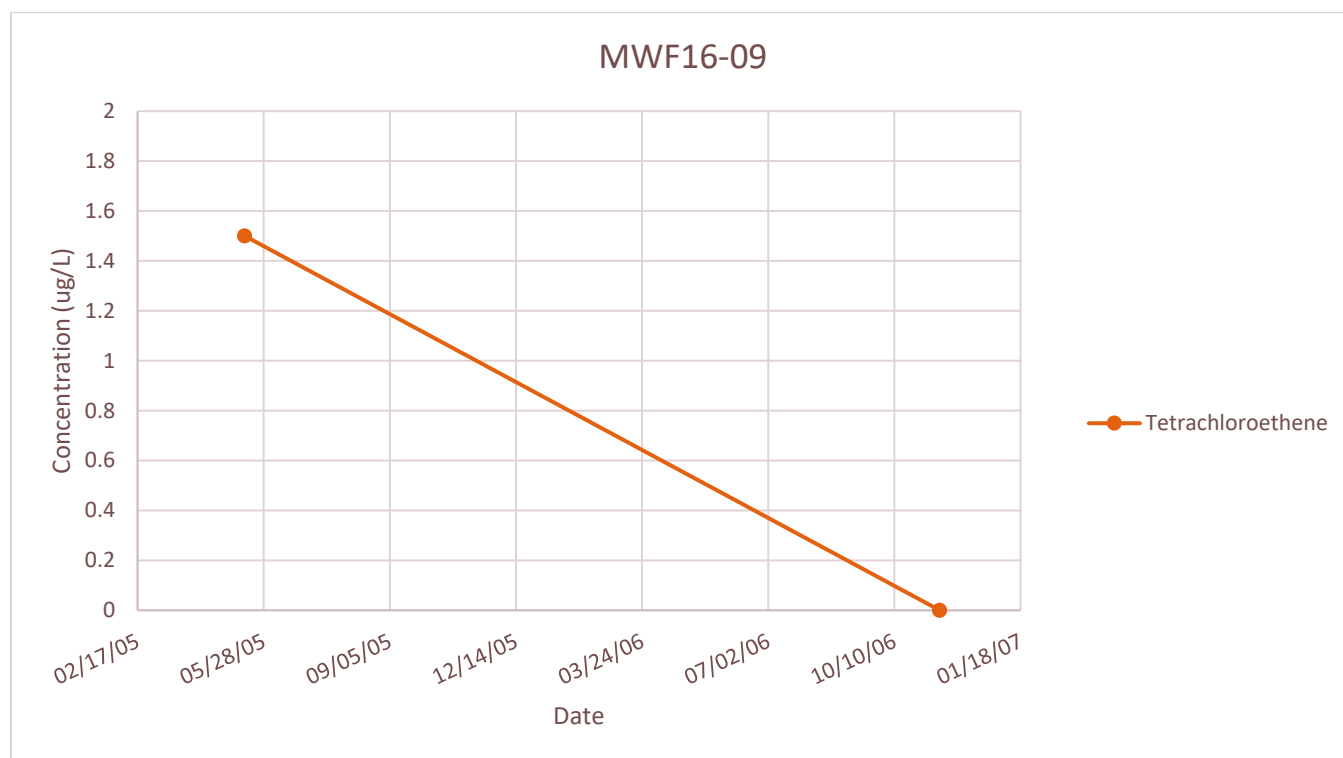
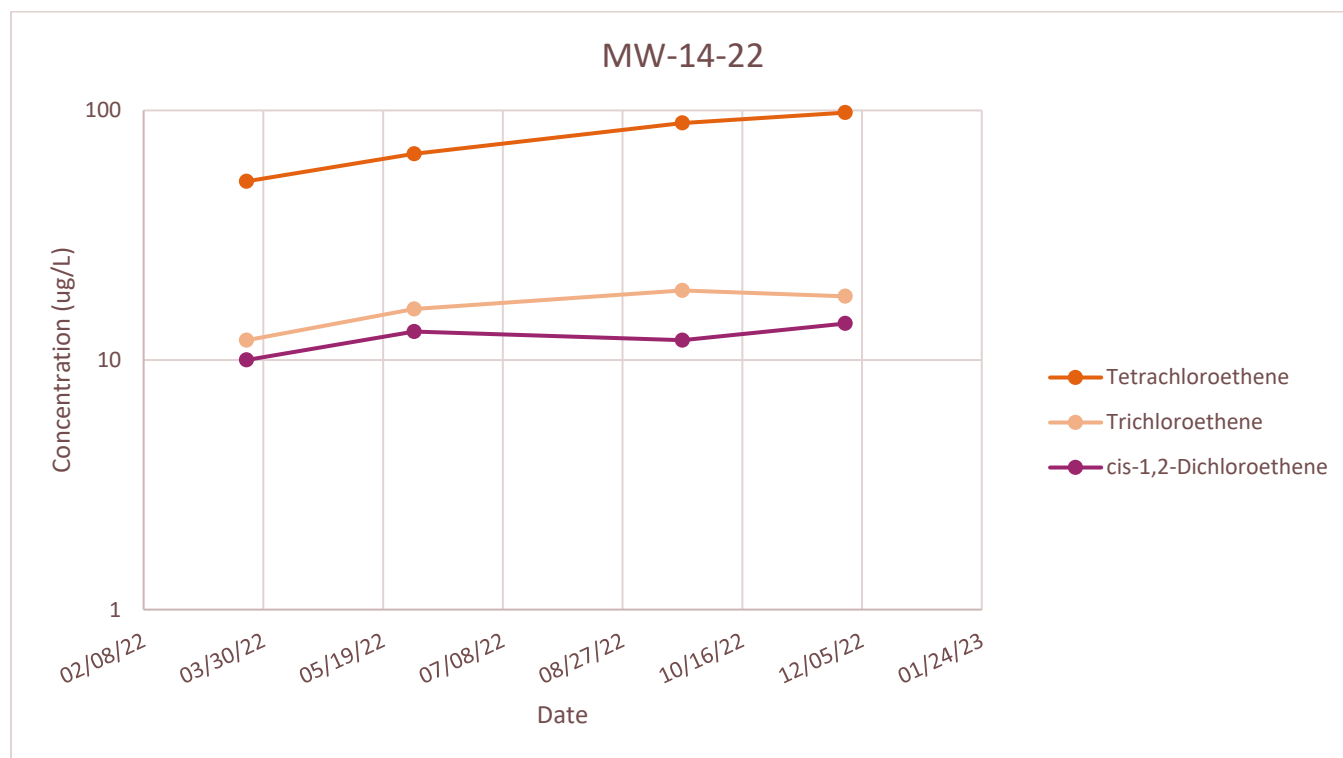
Median Slope Estimate = -- µg/L Per Day
 95% Confidence Interval = -- to -- µg/L Per Day



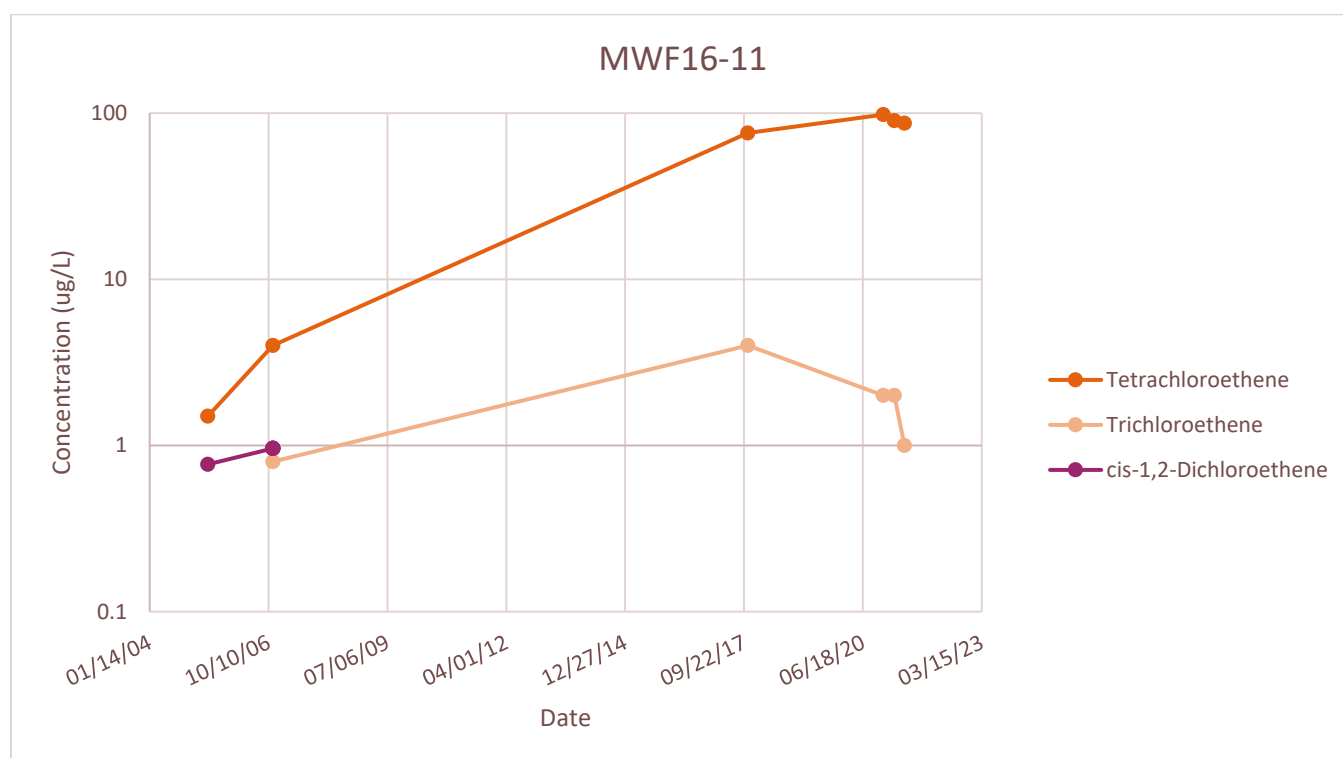
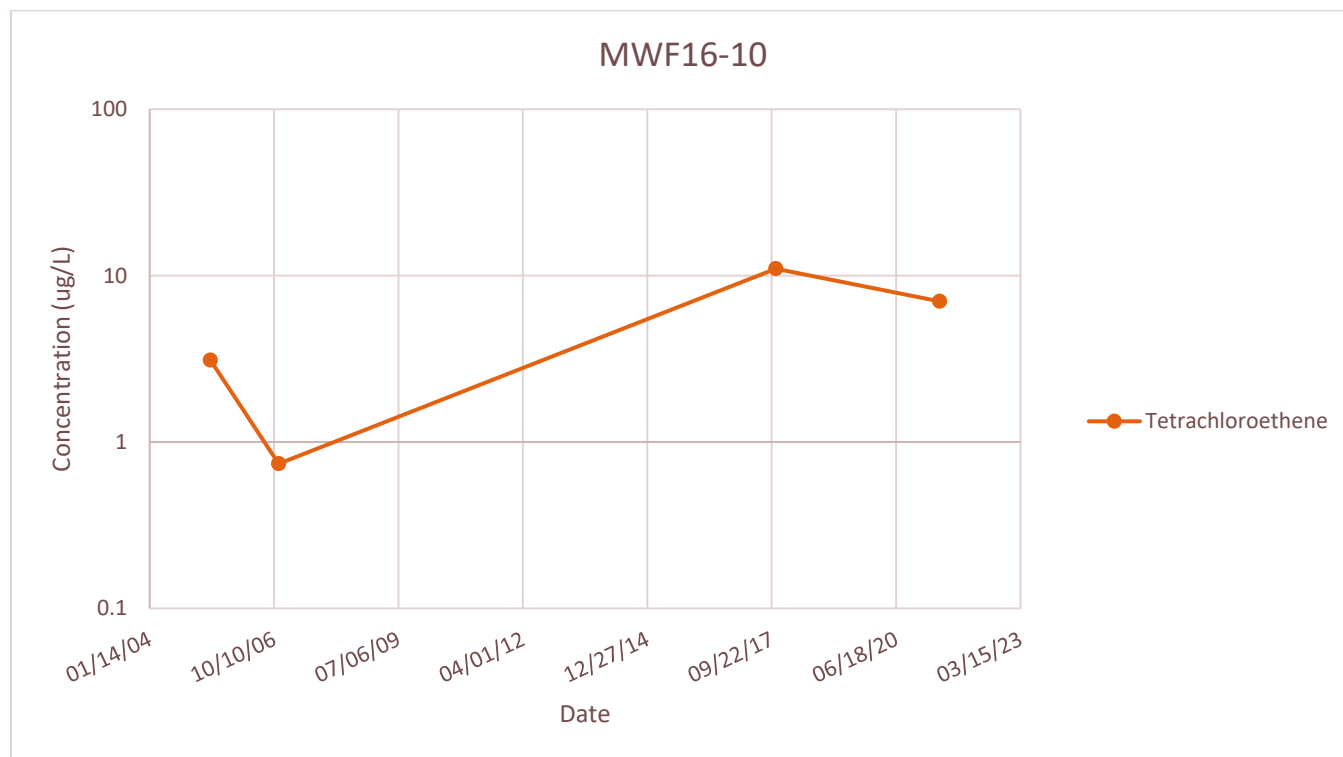
Concentration vs. Time Plot – cDCE in Well TW-12-22
 Racer PNC Stability Analysis

**FIGURE
D-41**

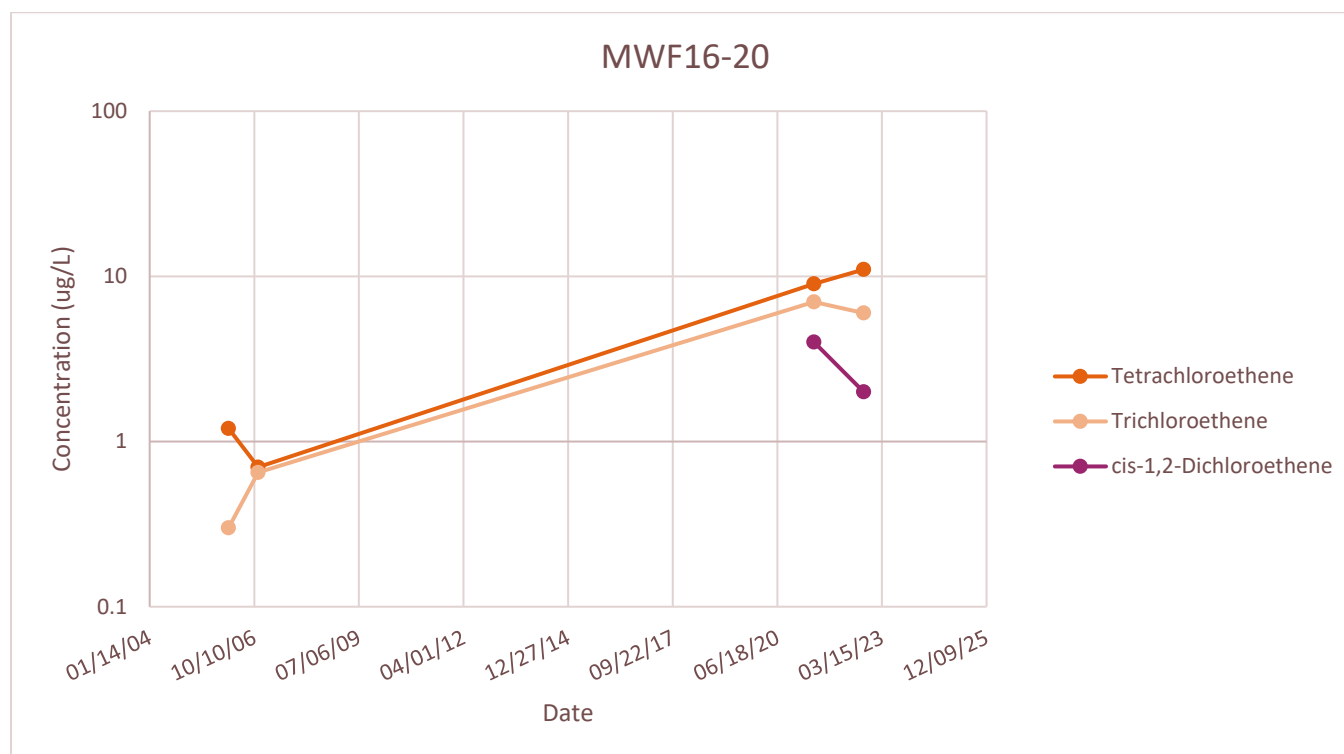
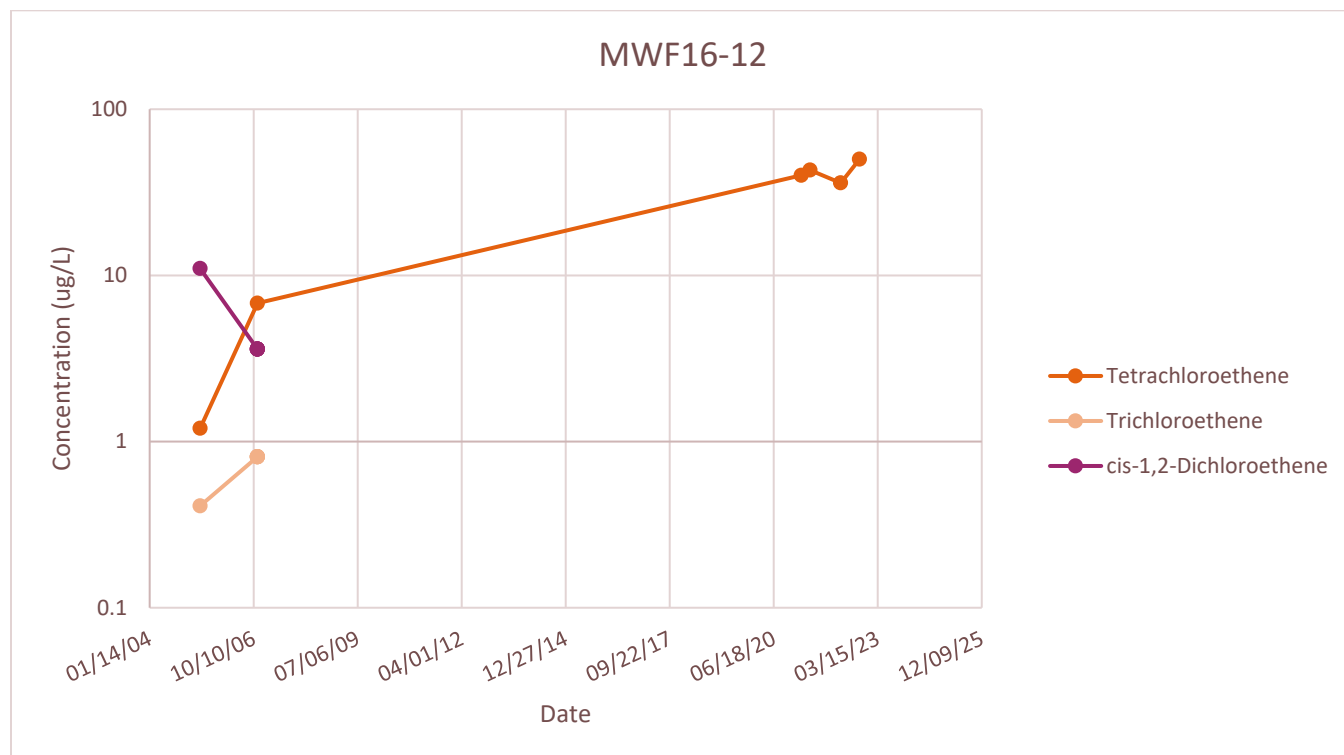
Concentration Over Time Graphs



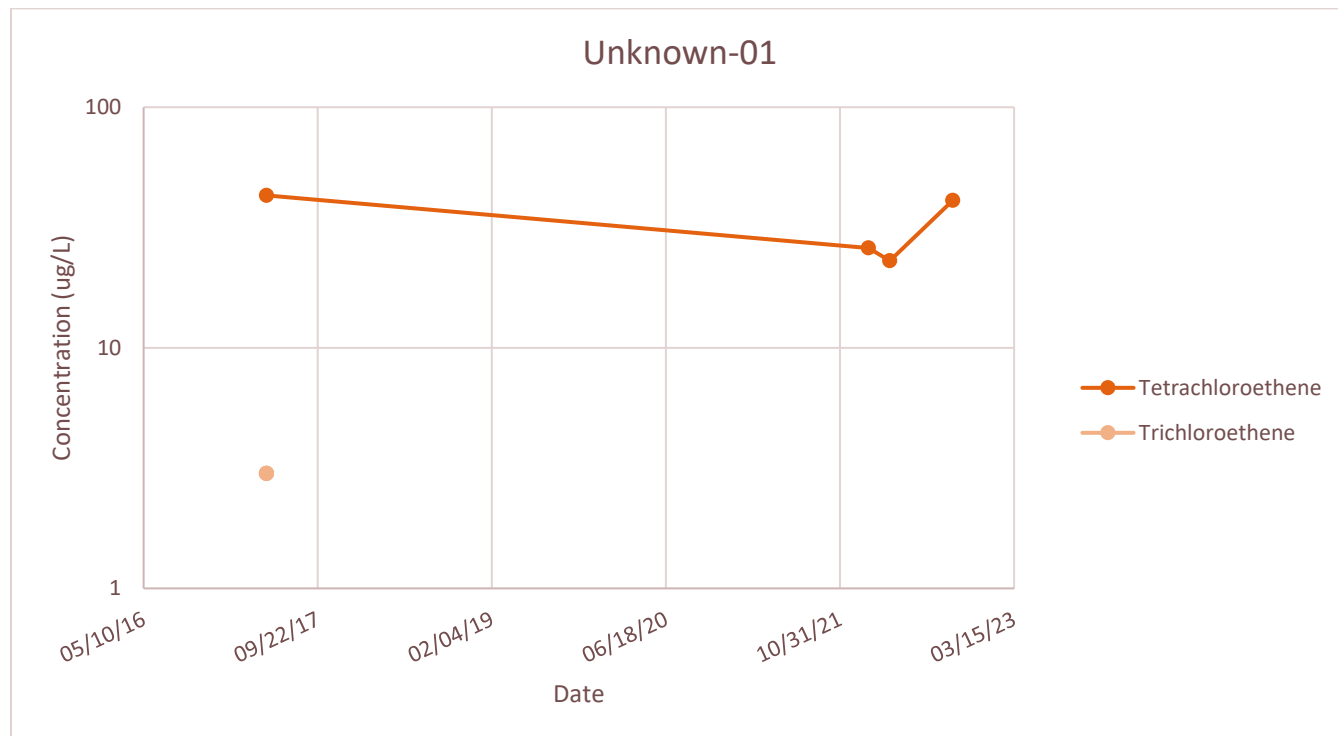
Concentration Over Time Graphs



Concentration Over Time Graphs



Concentration Over Time Graphs



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